# DOCUMENT RESUME

ED 246 720 HE 017 298

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|---|---|
| TITLE | Nursing and Nursing Education: Public Policies and Private Actions. |
| INSTITUTION | Institute of Medicine (NAS), Washington, D.C. |
| REPORT NO | ISBN-0-309-03346-2 |
| PUB DATE | 83 |
| NOTE | 335p. |
| AVAILABLE FROM | National Academy Press, 2101 Constitution Avenue, N.W., Washington, DC 20418 ($12.50). |
| PUB TYPE | Reports - Evaluative/Feasibility (142) |
| EDRS PRICE | MF01 Plus Postage. PC Not Available from EDRS. |
| DESCRIPTORS | *Employment Opportunities; Employment Projections; Federal Aid; Financial Support; Higher Education; Labor Needs; *Labor Supply; Needs Assessment; *Nurses; *Nursing Education; Occupational Surveys; Personnel Policy; *Public Policy |

ABSTRACT

Results are presented of a study of nursing and nursing education that focused on the need for continued federal support of nursing education, ways to attract nurses to medically underserved areas, and approaches to encourage nurses to stay in the profession. Findings are presented on whether the aggregate supply of generalist nurses will be sufficient to meet future demand, and how changes that could occur in the health care system might affect demand. Attention is also directed to: how the current and future supply of nurses may be influenced by the costs of nursing education and the sources of education financing; and education for generalist positions in nursing. In addition, the supply and demand situation for nurses educationally prepared for advanced professional positions in nursing is examined. The influence of employer policies and practices in utilization of nursing resources on demand and supply is also addressed. Finally, areas in which further data and studies are needed to better monitor nursing supply and demand are identified. In addition to 21 recommendations, appendices include information on Nursing Training Act appropriations, state reports on nursing issues, certificates for specialist registered nurses, projections of registered nurse supply and requirements, and doctoral programs in nursing. (SW)

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# Nursing and Nursing Education:
# Public Policies and Private Actions

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# Nursing and Nursing Education:

## Public Policies and Private Actions

Division of Health Care Services
Institute of Medicine

NATIONAL ACADEMY PRESS
Washington, D.C. 1983

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This report has been reviewed by a group other than the authors according to procedures approved by a Report Review Committee consisting of members of the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine.

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This study was supported by U.S. Department of Health and Human Services Contract No. 282-80-0043, T.O. 7.

Library of Congress Catalog Card Number 83-60053
International Standard Book Number 0-309-03346-2

Available from

NATIONAL ACADEMY PRESS
2101 Constitution Avenue, N.W.
Washington, D.C. 20418

Printed in the United States of America

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Frances D. Tompkins, Director of Nursing, Union Memorial Hospital, Baltimore, Maryland

Robert A. Wallhaus,* Deputy Director for Academic and Health Affairs, Illinois Board of Higher Education, Springfield, Illinois

---

*From April 1981 to January 1982.

Ruby L. Wilson, Dean and Professor, School of Nursing, Duke University, Durham, North Carolina

Robert C. Wood,* Director of Urban Studies, Professor of Political Science, University of Massachusetts, Boston, Massachusetts

---

*From January 1982.

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Study Director and Senior Professional Associate

Michael Millman, Senior Staff Officer
Barbara Smith, Senior Research Associate
Julia Bauder, Staff Officer
Sunny Yoder, Staff Officer
Ilissa Light, Research Associate
Deborah Parham, Research Associate
Jessica Townsend, Professional Associate

Sandra H. Matthews
Administrative Assistant

Virginia Ingram, Administrative Secretary
Patricia King, Administrative Secretary
Talitha Shipp, Word Processing Specialist

## Principal Consultants

Eugene Levine
Judith Ottoson
Margaret D. West
Daniel I. Zwick

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# Preface

This is the final report of a two-year study of nursing and nursing education undertaken early in 1981 by the Institute of Medicine of the National Academy of Sciences. The study, contracted by the Department of Health and Human Services, was mandated by Public Law 96-76, the Nurse Training Act Amendments of 1979.

The study was prompted by controversy in the late 1970s as to whether further substantial federal outlays for nursing education would be needed to assure an adequate supply of nurses. The intent of the congressional mandate as expressed in the legislative history was to secure an objective assessment of the need for continued federal support of nursing education programs, to make recommendations for improving the distribution of nurses in medically underserved areas, and to suggest actions to encourage nurses to remain active in their profession.

Over an 18-year period beginning in 1965, more than $1.6 billion was appropriated under the Nurse Training Act. Programs were established and periodically revised with the primary intention of expanding the supply of nurses but also to improve the quality and distribution of this supply. This was accomplished by increasing the capacity of educational institutions, providing student financial assistance, and increasing the opportunities of nurses to obtain one or another form of advanced training, such as that required to become a clinical nurse specialist or a nurse practitioner. Actions by the executive branch of four successive federal administrations suggesting decreased support for nursing education have reflected a conviction that these forms of federal support for nursing education generally have outlived their usefulness, with the possible exception of small amounts of support for selected objectives such as preparing particular kinds of nurse specialists. Throughout the period, however, Congress continued to urge more generous support of nursing education and to express concern about the effects of withdrawal of federal support. Authorizations for certain of the Nurse Training Act programs that peaked in the 1970s have been continued, albeit at decreased levels of support.

## The Study Charge

The congressional charge embodied in Section 113 of the Nurse Training Act Amendments of 1979 spelled out the purposes of this study as follows:

(a)(1)(A) to determine the need to continue a specific program of Federal financial support for nursing education,

(B) to determine the reasons nurses do not practice in medically underserved areas and to develop recommendations for actions which could be taken to encourage nurses to practice in such areas,

(C) to determine the rate at which and the reasons for which nurses leave the nursing profession and to develop recommendations for actions which could be taken to encourage nurses to remain in or re-enter the nursing profession, including actions involving practice settings conducive to the retention of nurses.

The part of the study described in paragraph (a)(1)(A) shall include consideration of the following:

(a)(2)(A) the need for nurses under the present health care delivery system and under such system as it may be modified by increased use of ambulatory care facilities or as it may be changed by the enactment of legislation for national health insurance. Determination of such need shall include determination of the need for nurses trained in each type of school of nursing (as defined in Section 853[2] of the Public Health Service Act) [a diploma school of nursing, an associate degree school of nursing, or a collegiate school awarding baccalaureate or graduate degrees in nursing], for nurses with graduate training in the varying nurse practitioner clinical specialities, and for nurse administrators and nurse educators.

(B) The cost of nursing education and a comparison of the cost of education at each type of school of nursing (as so defined) and comparison of the costs of each of the graduate programs of nursing.

(C) The availability of other sources of support for nursing education, including support under general programs of Federal financial support for postsecondary education, under State and other public programs, and from private sources.

The statute also specified that final recommendations be made after a two-year study of all the considerations described in the subparagraphs, and that, if a need for continued federal financial support for nursing is found, the study was to recommend the form it should take and the basis for such recommendations. The study also was instructed to recommend actions to encourage nurses to practice in underserved areas, to remain in or re-enter the nursing profession, and to make practice settings more conducive to the retention of nurses.

The study's recommendations on federal support of nursing education are addressed principally to the Committee on Labor and Human Resources of the Senate, the Committee on Energy and Commerce (previously the Committee on Interstate and Foreign Commerce) of the House of Representatives, and the Secretary of the Department of Health and Human Services. However, the fact that Congress has directed the study to consider the nation's need for various types of nurses and to develop recommendations for actions that could be taken to encourage nurses to practice in underserved areas and to remain in or re-enter the nursing profession broadens the audience to include state governments and the private sector. Nurses and nurse educators, individually and through their organizations, are a vitally important audience, as are the state commissions on higher education, many health professional associations, and other groups with a stake in the future of nursing education. Many remedial actions can be carried out only by those who set organizational, management, and personnel policies in hospitals, nursing homes, public health departments, and other agencies that employ nurses.

## Conduct of the Study

Under a preliminary contract awarded in 1980, the Institute of Medicine established a broadly based planning committee to outline the scope and identify the major issues for study. Upon receipt of the final contract, a full study committee was constituted in 1981 to establish specific policies and procedures for the study staff, to carry on continuing deliberations, and to be responsible for the study's recommendations. In line with established practice, the committee was composed of Institute members and other nationally recognized experts with experience in analysis and the formulation of public policy as well as in other disciplines related to nursing issues. Over the period of the project, the full study committee met five times for a total of 11 days of deliberations. In addition, individual committee members have spent countless days in preparation for meetings, participation in the work of subcommittees, advisory panels, and workshops.

The committee established a number of ad hoc advisory panels of additional experts to assist in specific aspects of the study. It also engaged consultants, commissioned working papers, and secured the informal participation (through its workshops and other means) of a broad selection of the nursing profession's representatives and of others with authoritative knowledge in relevant fields. Although

Institute and Academy policy precluded committee membership by official representatives or employees of national organizations with a direct interest in the outcome of the study, ample opportunity was afforded in the course of the study to obtain information and opinions from representatives of nursing and other organizations.

The study began with activities required to prepare an interim report at the end of six months, as called for in the statutory mandate. An extensive literature search was conducted; subsidiary questions relating to the congressional charge were developed and explored; an open meeting was held on May 18, 1981, at which individuals and representatives of organizations concerned with nursing testified; and written statements, data, and recommendations were solicited and received from a wide range of groups and individuals. Seventy-five recent state level studies of nursing were identified, collected, and analyzed; working papers were prepared on numerous issues pertinent to understanding nurses' satisfaction and dissatisfaction with various conceptions of nursing roles; a detailed review was conducted of survey and inventory data dealing with the characteristics and requirements of education and employment settings for both registered nurses and licensed practical/vocational nurses; and an analysis was begun of the assumptions and methods employed by the Department of Health and Human Services and by states to project the future needs and the future supply of nurses.

On August 5, 1981, the study's interim report was transmitted to the Congress and to the Secretary and was made available for public consideration. Comments were received from numerous individuals and organizations. These were reviewed by the committee and staff and were taken into account during the conduct of subsequent study activities.

Many activities begun earlier continued throughout the balance of the study. In addition, major workshops were conducted on the economics of nursing and graduate nursing education; ad hoc advisory panels were appointed, and members participated in group meetings and in individual consultations during the course of the study. The study staff also kept in touch with new developments in the nursing field by means of site visits in ten states and attendance at selected conferences and meetings. In particular, close liaison was maintained with the National Commission on Nursing, a study group of officials and members of national health associations and organizations, which concurrently was addressing crucial professional issues in nursing.

## A Note About Data

The following advice from the former Committee for Interstate and Foreign Commerce of the House of Representatives is included in its report on the legislation in which the study was mandated:

> It is the committee's intent that the required study concentrate on review and analysis of ongoing studies and available information respecting nursing education

> and the existing and potential supply and demand for nurses, rather than a wholesale duplication of present undertakings. . . .

Thus, major new data collection efforts were explicitly discouraged. Instead the study based its findings primarily on its syntheses and interpretation of data secured from many existing sources. We found certain important information to be outdated or unavailable in the detail desired. Generally, there is a lag of several years between the conduct of national nursing surveys and the availability of their results. For example, both the study's interim report of July 1981 and the Secretary's Third Report to Congress in February 1982 had to rely on survey data collected in 1977. Fortunately, for this final report we have been able to draw on the results of a parallel survey of registered nurses, conducted in November 1980, made available to us during the summer of 1982. Other sources of data providing new information also became available during the latter part of the study period.

In addition to the 1977 and 1980 sample surveys, the study's analyses draw on data from a great variety of other sources, referenced throughout the text. A few major ones deserve special mention: American Hospital Association, Annual Survey of Hospitals; American Nurses' Association, 1977 Inventory of Registered Nurses; National Center for Health Statistics, National Nursing Home Survey 1977; and National League for Nursing Annual Survey of Schools of Nursing, and Annual Survey of Newly Licensed Nurses.

## Organization of the Report

After an introductory chapter that provides the reader with background on the diversity both of nurses' roles and of nurse education programs, the report focuses on the particular components of the study charge.

Chapters II through V deal with various aspects of the first study question: Is there a need for continued federal support for nurse education? Chapter II reports the committee's findings on whether the aggregate supply of generalist nurses will be sufficient to meet future demand, and how changes that could occur in the health care system might affect demand. Chapter III discusses how the current and future supply of nurses may be influenced by the costs of nursing education and the sources of education financing. Chapter IV discusses education for generalist positions in nursing, and particularly the policies and practices in nursing education that affect the future supply of new nurses and the opportunities for educational and career advancement for those already in the work force. Chapter V examines the supply and demand situation for nurses educationally prepared for advanced professional positions in nursing.

The second major study question--how to alleviate shortages of nurses in underserved areas and for underserved populations--is dealt with in Chapter VI. The third study question--how to improve retention of nurses in their profession--is addressed in Chapter VII in conjunction with an analysis of how employer policies and management practices in the utilization of nursing resources influence demand and supply. The report concludes with an examination in Chapter VIII of the nation's nursing research resources and needs. This chapter identifies areas in which further data and studies are required to improve capabilities for monitoring the nation's supply of and demand for nurses, and to guide national and state planning for nursing education.

The committee recognized a number of problems that, although important, after further consideration seemed not to require elucidation to answer the congressional questions and were not otherwise within the scope of the report's intent. Also, in some instances, where evidence was equivocal, we have presented data without conclusions. Moreover, we were sensitive to the fact that we should not address at a level of national policy those matters that need to be resolved through the interplay of professional and market forces. Examples include equal pay for comparable work; collective bargaining for nursing; relationships between nurses and physicians; jurisdictional and professional issues of credentialing, including specialty certification; and questions of staffing substitution and production function analysis. On the issue of what education pathways provide appropriate preparation for entry into professional nursing practice, we found ambiguity in the evidence about how well graduates of the various nurse education programs that prepare students for registered nurse licensure subsequently meet various employment needs, and disagreement among those who are professionally and managerially involved in the delivery of health care. We could reach no conclusions on this issue. We do, however, present information bearing on the question and present recommendations for research needed to enlighten policymakers. It is our conviction that this issue essentially involves matters for the profession, employers, and others to work out through collaboration of national organizations as well as in the marketplace and in the states--the arenas in which most resource allocation decisions for health education programs take place.

The study has not considered the needs of the Veterans Administration or the Department of Defense for nursing personnel. To the extent that their present requirements are reflected in current supply-demand data, their normal peacetime needs may be assumed in our projections for the future. Additional requirements they may have, however, for augmented numbers or special education of RNs are properly within the purview of their manpower planning and appropriations.

A study of such scope and detail as this depends for its successful conclusion on the good-spirited labors of many people. I hope that all of them are named somewhere in these pages--the members of a superbly dedicated study committee and study staff, the consultants, the workshop panels, and those in the agencies and professional organizations who are listed on a separate page of acknowledgments. The strength of this report borrows something from the devotion of each person who worked on it.

Arthur E. Hess
Chairman

# Acknowledgments

The committee and its staff are indebted to many individuals and organizations for thoughtful contributions made to various aspects of the study. The members of the committee's five advisory panels and the participants in its two workshops (Appendix 9) gave generously of their time to share their wisdom and experience. Special thanks are due to Myrtle Aydelotte, who contributed an important background paper to the project. She, Robert Derzon, Vernice Ferguson, Wayne Kirschling and Donald Yett took part in two or more panels and workshops, bringing insights that were particularly valued.

We also want to extend our appreciation to Walter Johnson, John Vaughn, and Lucille Knopf at the National League for Nursing; to Judith Yates and Pauline Brimmer at the American Nurses' Association; to Marian Murphy at the American Association of Colleges of Nursing; to Eileen McQuaid Dvorak at the National Council of State Boards of Nursing; to Gail Crossley at the National Association of Nurse Recruiters; and to Lucille Etheridge, formerly at the National Association for Practical Nurse Education and Service. At the American Hospital Association, Ross Mullner and Jane Gibson were most helpful. We have also enjoyed and profited from a continuing close contact with the staff and members of the National Commission on Nursing during the course of the study, for which we owe special thanks to Robert Cathcart and to Marjorie Beyers.

Many people in the Department of Health and Human Services gave us valuable assistance. We are particularly grateful to Jo Eleanor Elliott and her associates in the Division of Nursing for providing background on the Nurse Training Act programs. We also want to thank a number of people from the Division of Health Professions Analysis. The director, Howard Stambler, was most helpful in ensuring our access to many sources of information important to the study; Evelyn Moses and William Spencer gave valuable technical advice on the use of the 1980 national sample survey data; John Drabek and William Losaw were a great help in adapting the department's mathematical manpower model to the committee's specifications. At the Department of Education, Salvatore Corrallo guided us to useful sources of information on the costs and sources of financing of education.

Finally, we would like to express special appreciation to Robert Walkington, our project officer at the Department of Health and Human Services, and to Karl Yordy, director of the Division of Health Care Services at the Institute of Medicine, for their helpful suggestions at every stage of the study.

Katharine G. Bauer
Study Director

# Summary and Recommendations

Our study estimates that there are more than 1.3 million registered nurses employed in the United States today. They are the largest single professional component of a health care system that represents almost 10 percent of the gross national product. Their responsibilities are diverse. Two-thirds work in the nation's hospitals, providing or supervising the care of patients. Others care for patients in their homes, in nursing homes, community health centers and public health clinics, physicians' offices, and health maintenance organizations. Still others work in schools, industry, and public administration. They are involved not only in care of those acutely ill, but also in preventive services and in care of the chronically ill and disabled.

The leadership component of this nurse population also has highly differentiated functions. Top nurse administrators manage large and complex nursing services in hospitals where they often are responsible for multi-million dollar budgets. In all the varied institutional and community settings of patient care, they manage services provided by approximately 915,000 staff level registered nurses, more than 500,000 licensed practical nurses, and an estimated 850,000 aides. Faculty in schools of nursing educate future nurses and conduct research to improve the care of patients through the practice of nursing. An increasingly important part of the advanced nursing cadre are specialists, such as nurse practitioners, nurse midwives, and a variety of clinical nurse specialists in hospitals.

During the late 1970s, when this study was mandated by Congress, concern about nursing shortages was strong and was expressed publicly in terms of the need for more generalist "bedside" nurses. The study was, in effect, asked to respond to the following kinds of questions: Will there be enough registered nurses (RNs) of the types needed to ensure an adequate future supply of the various types of nurses? Should the federal government continue its specific support of generalist nursing education in order to assure the adequacy of their supply? What are the means to bring better nursing services to underserved populations in rural and inner city areas, as well as to elderly and minority populations who generally lack adequate access to nursing care? Finally, what is the true extent of RN dropout, and what are the means for retaining such nurses in their profession? The last question arose from a widespread opinion that investment of public funds to train RNs was wasteful because they would soon leave for higher paying, less stressful occupations.

Because concern for all these aspects of current and possible future nurse shortages appeared to be a motivating force for the study, the committee examined the various aspects of nursing and nursing education in that general framework. In our analysis, we found reasons to distinguish sharply between shortages or maldistribution of nurses prepared as generalists to provide direct care to patients, and shortages of nurses in leadership and specialty nursing. The problems and the possible solutions are quite different for these two groups.

## The Committee's Recommendations

Our recommendations are framed not only in the general context of the provisions of the Nurse Training Act (NTA) of 1965 and its subsequent amendments, but also in the context of other federal, state, and local government and private sector actions that influence both the demand for and the supply of RNs and LPNs. Many factors enter into the alleviation of current numerical and distributional scarcities of nurses and in the prevention of future scarcities. In most instances, the responsibilities of the various public and private sectors interact. In consequence, the committee's recommendations generally involve shared funding to stimulate the kind of collaborative approaches most likely to ensure desired results.

This section presents the committee's specific responses to the three congressional questions of its study charge. Each recommendation addresses a topic that is, in effect, a subset of the overall study question under consideration. The recommendation under each of these topics is accompanied by an abstract of the conclusions that led to its formulation. The congressional questions and the topics and recommendations are set forth in the sequence in which they appear in the statutory charge and in the chapters of the full report.

### Congressional Question One: IS THERE A NEED TO CONTINUE A SPECIFIC PROGRAM OF FEDERAL FINANCIAL SUPPORT FOR NURSING EDUCATION?

### Meeting Current and Future Needs for Nurses*

RECOMMENDATION 1

> No specific federal support is needed to increase the overall supply of registered nurses, because estimates indicate that the aggregate supply and demand for generalist nurses will be in reasonable balance during this decade. However, federal, state, and private actions are recommended throughout this report to alleviate particular kinds of shortages and maldistributions of nurse supply.

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*When the term "nurse" is used without qualification, it refers to a person licensed as a nurse, whether holding the license as a registered nurse or a practical nurse.

During the 1970s, increasing sophistication of medical technology and growing complexity of health services continuously increased the demand for more and better prepared nurses. Supply fell behind explosive demand, and local labor markets for nurses during most of that decade manifested obvious scarcities in numbers and types of nurses whom hospitals and other health facilities wanted to employ. Nonetheless, in the short time between two official surveys in 1977 and 1980, the supply of active registered nurses (RNs) jumped by 30 percent, a figure well in excess of prior predictions. Four out of five of these additional RNs were employed by hospitals, where two-thirds of all RNs and almost two-thirds of all licensed practical nurses (LPNs) work. The number of practical nurses also has grown, but at a slower rate.

On the basis of all evidence it has been able to study, the committee concluded that, as of the fall of 1982, in the aggregate there was not a significant national shortage of generalist RNs or of LPNs. We have, however, identified shortages that occur unevenly throughout the nation in different geographic areas, in different health care settings--especially those that serve the economically disadvantaged--within institutions, and in specialty nursing. The resolution of such particular shortages depends both on the operation of market forces and on concerted actions by the federal, state, and private sectors following the lines of this study's recommendations.

## State and Local Planning for Generalist Nursing Education by Program Type

### RECOMMENDATION 2

> The states have primary responsibility for analysis and planning of resource allocation for generalist nursing education. Their capabilities in this effort vary greatly. Assistance should be made available from the federal government, both in funds and in technical aid.

Most decisions affecting the allocation of resources for the education of generalist nurses take place at state and institutional levels. Shortages are often viewed by members of the nursing profession, employers, and others in terms of the need for RNs specifically prepared in one or more of the three different types of basic nursing education programs--diploma, associate degree, and baccalaureate in nursing--and of the additional need for LPNs. The committee concluded that there was no evidential basis for making national recommendations on the desired proportions of RNs to be prepared in each basic educational pathway, or on the distribution of RN and LPN nursing service personnel within and among diverse nurse employment settings. In the past, these settings have sustained market demand for the output of each type of basic nursing education program.

The committee analyzed a large number of state reports dealing with efforts to disaggregate future state RN supply according to educational preparation. It is apparent that issues of educational differentiation are squarely on the agenda of nursing education policy. It also is apparent that state studies estimating future supply and need mainly on the basis of professional judgments of numbers and kinds of nursing personnel needed (by type of educational preparation) produced widely different estimates in levels and mix of staffing (and of amounts of time required by nursing service personnel per patient day) for similar practice settings from one state to another.

Many states appear not to be well organized to deal with nursing issues and nursing education policy on a continuing basis. The committee noted the apparent inefficiency of ad hoc, short-term efforts as states struggled to ascertain their current and future needs for RNs and LPNs and to identify related nursing education priorities. In many cases, the follow-through on these attempts has not been coordinated or appears not to have led to consensus building on goals for basic nursing education. Finally, projections of needed future supply of nurses appear to be hampered by the absence of balanced methodological alternatives for estimating anticipated future market demands. A relatively small outlay of federal technical assistance dollars is necessary to assist states in developing a more consistent methodology for their estimates of future demand and to promote ongoing state planning for nurse supply.

## Federal Education Financing to Help Sustain the Basic Nurse Supply

RECOMMENDATION 3

> The federal government should maintain its general programs of financial aid to postsecondary students so that qualified prospective nursing students will continue to have the opportunity to enter generalist nursing education programs in numbers sufficient to maintain the necessary aggregate supply.

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The assessments of future supply on which our first recommendation is based were made in the face of concern that current levels of federal financing of education might not be maintained. Limited available evidence suggests that nursing students are substantially dependent on general higher education student aid programs.

Considerations that go into making projections at both federal and state levels do not reveal the complex decision making processes and the great variety of influences that ultimately determine, locally, the size and composition of the future pool of RNs. The committee has attempted to answer the congressional questions on comparative educational costs and on sources of financing to the extent that data could be found or developed. Estimates of student and institutional costs for various programs, however, permit only cautious comparisons among programs. Conclusions as to the societal utility or professional value of one type of program or another should not be made on cost considerations alone.

Students' education costs have risen rapidly over the past few years and increases are projected to continue. Nursing students, who are predominantly women, finance their tuition and living costs from a combination of sources: the very limited funding remaining under the Nurse Training Act scholarship and loan programs; general federal programs of financial aid for all postsecondary students; state and collegiate grant programs; earnings; and personal and family savings. Higher education--and nursing education in particular--is entering a period in which resources will be more constrained than in the past. Nursing students tend to come from families with moderate incomes or to count heavily on their own resources to finance their education. They bear the cost without the assurance of earnings comparable to those of students in other fields who make similar educational investments.

General federal financial aid programs for postsecondary students, designed to improve equality of access to education, have been a major source of financing for students in basic nursing education programs. Reductions in these programs could curtail the number of students entering basic nursing education or seriously limit students' choices among educational programs. Such reductions were not presupposed in any of the assumptions that led to our estimates of future supply; their impact would be unpredictable.

## Continued State and Private Support of Nursing Education

RECOMMENDATION 4

> Institutional and student financial support should be maintained by state and local governments, higher education institutions, hospitals, and third-party payers to assure that generalist nursing education programs have capacity and enrollments sufficient to graduate the numbers and kinds of nurses commensurate with state and local goals for the nurse supply.

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State tax dollars appropriated for higher education represent the largest source of governmental and institutional support for nursing education. Local governments and private donors are important financing sources for community colleges and private educational institutions, respectively. Hospitals support nursing education by offering diploma programs in nursing and/or staff development programs, providing educational fringe benefits, and subsidizing nurse employees who are advancing their level of education in college-based programs in return for service commitments. These costs are financed principally through third-party reimbursements.

Fiscal pressures on state and local governments, as well as cost containment efforts in hospitals, threaten to reduce funds available from these sources for nursing education. This would, in turn, increase the cost burden on students and diminish their educational opportunities. These considerations link this recommendation and the preceding ones, because it is essential to maintain a monitoring capacity at both national and state levels to track current supply and demand and to refine at the level of each state the continuing adjustments necessary in resource allocation to assure continuing adequate accretions to the pool of generalist nurses.

## Attracting New Recruits to Nursing

RECOMMENDATION 5

> To assure a sufficient continuing supply of new applicants, nurse educators and national nursing organizations should adopt recruitment strategies that attract not only recent high school graduates but also nontraditional prospective students, such as those seeking late entry into a profession or seeking to change careers, and minorities.

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Actions taken by the administrators and faculty of nursing education programs can strongly influence both the numbers and types of applicants to their programs. Because changes in the nation's demography have led to a shrinking pool of high school graduates, and because of the attractions of other careers for women, nurse educators must recruit students from new sources in order to maintain the output of their programs. So-called nontraditional candidates are likely to respond to special arrangements made to facilitate their entry into nursing. These candidates include mature women first entering the labor market, men, minorities, and people seeking career changes. In the latter category, people who have completed other courses of education or have embarked on other careers may wish to change to nursing. Additionally, there may be people who find their careers disrupted by technological changes, industrial dislocations, or altered priorities in public expenditures.

## Improving Opportunities for Educational Advancement

RECOMMENDATION 6

> Licensed nurses at all levels who wish to upgrade their education so as to enhance career opportunities should not encounter unwarranted barriers to admission. State education agencies, nursing education programs, and employers of nurses should assume a shared responsibility for developing policies and programs to minimize loss of time and money by students moving from one nursing education program level to another.

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It is essential that annual accretions to the nurse supply from new graduates be maintained, but it also is increasingly important to improve the opportunities of nurses already in the work force to attain higher levels of education. Although pursuit of higher education by large numbers of RNs already licensed will not necessarily augment overall numbers in practice, over time it can significantly change the characteristics of the supply, enhance individual opportunities for career advancement, and provide candidates for employment in categories that employers may find in short supply. Advancement of diploma and associate degree graduates to the baccalaureate level not only produces a result consistent with a goal espoused by many leaders in the profession but also enlarges the pool from which graduate nursing education can draw. Educational progression from less than a baccalaureate degree to higher degrees has been characteristic of the careers of many nurses who now hold advanced degrees.

In 1980, one in every ten RNs was enrolled in some form of educational program intended to advance his or her credentials. Although many educational programs have responded to the need of nurses for educational advancement by facilitating credit transfers or providing for advanced placement credits, many others still do not actively pursue this objective. Upward mobility for both LPNs and RNs has been hindered in many places by past failures of educational systems and individual institutions to plan their programs to make successive stages of nursing education "articulated," so that academic credits obtained can contribute maximally toward admission and progression in the next stage. Many state studies have identified educational advancement as a high priority, and in some states significant progress has been made toward this goal. Educational institutions will inevitably incur some added costs for steps taken to ease students' transitions from one educational program to another. On the other hand, where experienced nurses successfully challenge clinical requirements, educational institutions may also benefit from proportionately fewer enrollments in the more expensive clinical components of their nursing education programs.

Motivation is growing ever stronger for RNs and LPNs to pursue further education. Professional pressures on the individual come in part from the growing complexity and variety of nursing responsibilities and in part from anticipation that future career and promotional opportunities may rest on qualifications that differentiate nurses by academic credentials. Although not an approach preferred by some educators in terms of time and cost, attainment of future supply goals may well depend on a continual upgrading of the quality of a pool of nurses that is primarily nourished by streams of new entrants whose initial career objective may have been merely to secure nursing employment at minimum personal cost.

## Improving Collaboration Between Nursing Education and Nursing Services

RECOMMENDATION 7

> Closer collaboration between nurse educators and nurses who provide patient services is essential to give students an appropriate balance of academic and clinical practice perspectives and skills during their educational preparation. The federal government should offer grants to nursing education programs that, in association with the nursing services of hospitals and other health care providers, undertake to develop and implement collaborative educational, clinical, and/or research programs.

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Many employers tend to believe that newly graduated nurses from academic programs are inadequately prepared to assume the responsibilities of clinical nursing. Many nurse educators, on the other hand, believe that employers do not offer their graduates--especially those with baccalaureate preparation--the opportunity to practice at the level of professional skills for which they have been prepared. There is increasing concern and attention among nursing leaders to reduce this discord. Some few prototypes exist of organizational structures that provide unified nursing accountability, and to bring together the perspectives of educators and employers of nurses for the mutual benefit of patients, students, and nursing staffs. Other kinds of increased collaboration between nurse educators and nursing service staffs are found across the country.

The development of practical arrangements for improving communication and collaborative efforts between nurse educators and nursing service administrators requires the solution of a great many logistical, organizational, and financial problems among a large variety of institutions that do not have close affiliations. It is difficult and time consuming to provide incentives to test untried relationships and new patterns of accountability. Further experimentation and demonstrations are needed to guide institutions of all types in moving toward appropriate goals. Modest grants should be available to demonstrate innovative ways of implementing collaborative arrangements, including those that emphasize clinical and research appointments for faculty. Although the financial burden of developing new collaborative arrangements should fall primarily on those to whom benefits will accrue, some federal support would indicate a strong national interest in the problem and would provide impetus for wider experimentation. A reconciliation of differences between the goals and expectations of leaders in nursing practice and in education must occur to improve both the education of students and the care of patients.

## Increasing the Supply of Nurses With Graduate Education to Fill Advanced Positions in Nursing

### RECOMMENDATION 8

> The federal government should expand its support of fellowships, loans, and programs at the graduate level to assist in increasing the rate of growth in the number of nurses with master's and doctoral degrees in nursing and relevant disciplines.* More such nurses are needed to fill positions in administration and management of clinical services and of health care institutions, in academic nursing (teaching, research, and practice), and in clinical specialty practice.

In examining the future need for nurses, the committee identified a wide range of problems that can be alleviated only by increasing substantially the supply of nurses with advanced education. The nation's cadre of professional nurses is short of persons who have been educationally prepared for advanced positions in the administration of nursing services and nursing education programs, in education (including research), and in clinical specialty areas.

The complexity of today's health care settings demands managers who are skilled not only in nursing but in the techniques of human resource management, decision making, and budgetary management. Also, the competencies of nurses delivering care at the bedside depend to a great extent on the capabilities of their teachers, who must, within a relatively short period, guide and facilitate the students' acquisition of the theoretical knowledge and clinical experiences necessary to produce competent professionals. The claim of nursing education leaders that many members of current nursing school faculties are inadequately prepared to accomplish this purpose is borne out by the comments of employers of nurses as well as by comparisons of the academic preparation of nursing faculty to that of faculty in other disciplines. A closely related problem is the short supply of faculty engaged in research--a function performed in most disciplines by those who are academically based. Finally, although well qualified generalist nurses can deliver care effectively, the growing complexity of care in many health settings presents problems that increasingly require the specialized knowledge and experience of nurses with advanced nursing degrees, both to provide direct care and to provide consultation and training to less highly prepared staff nurses caring for patients with complex illnesses.

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*Two members of the committee wished to delete the words "and relevant disciplines." Their statement of exception is in Chapter V.

In times of severe economic constraints, states may be more willing to finance basic nursing education programs that are perceived as directly fulfilling local demand for nurses rather than to support master's and doctoral programs, whose graduates may leave a given state labor market because they have more opportunities. The committee believes that RNs with high quality graduate education are a scarce national resource and that their education merits continued federal support.

Although the demand for highly qualified nursing administrators, faculty members, researchers, and clinical specialists prepared at the graduate level has been increasing and is expected to continue to increase, the evidence of a scarcity of nurse educators is most apparent. Only a small portion of nurse faculty is prepared at the doctoral level. To increase the nation's supply of nurses with advanced degrees, public and private universities with graduate programs in nursing must expand and strengthen their nursing faculties. In the face of the shortage of academically qualified faculty with expertise in nursing-related disciplines, such as management, the behavioral and basic sciences, and research methodology, deans of schools of nursing have opportunities to attract faculty from relevant schools and departments in their universities or neighboring institutions both to fill immediate needs and to help build future teaching and research capabilities. Joint programs and other forms of collaborative arrangements between university academic units, such as with business schools, health administration programs, and social science departments (e.g., psychology, anthropology, and sociology), may be found desirable. Programmatic support from the federal government can help to improve graduate level nursing education in these and in other ways.

Lowering financial barriers through loans and grants to encourage full-time enrollment of RN graduate students will increase the supply more rapidly, because master's and doctoral students who must work to support their education take longer to complete it. Federal financial assistance to students in master's programs should be packaged with funds for programmatic support. The committee would expect, in line with the objective of strengthening the nursing profession as well as nursing education, that such programmatic and accompanying student support for master's programs would be available through competitive grants. In practice, nursing programs would be in an excellent competitive position to secure such grants, but arrangements in other programs should be possible.

Federal doctoral level support should result primarily in the strengthening of existing programs in nursing and not in the proliferation of new and possibily weak doctoral offerings. However, until schools of nursing have sufficient numbers of qualified faculty to meet the full range of scholarly interests and professional needs of doctoral students, financial aid in the form of fellowships to RN doctoral students should be designed so that such students are not precluded from pursuing doctoral studies in nursing-related disciplines. To encourage graduate students to return to nursing when they have earned their degrees, loans based on need should carry such service obligations. On the other hand, most committee members believe that fellowships awarded on the basis of scholarly excellence and promise of a fundamental contribution to the knowledge base should not carry the same kind of obligation.

Congressional Question Two: WHAT ARE THE REASONS NURSES DO NOT SERVE IN MEDICALLY UNDERSERVED AREAS AND WHAT ACTIONS COULD BE TAKEN TO ENCOURAGE NURSES TO PRACTICE IN SUCH AREAS?

An important exception to the generalization that there is a sufficient existing supply of generalist nurses for direct patient care was noted in the discussion following Recommendation 1. That exception arises from the fact that the labor market cannot function properly when there are financial, geographic, and other barriers to the provision of medical care and other health services for disadvantaged segments of the population.

Lack of access to preventive and primary care services by residents of rural and inner-city areas remains one of our nation's most pressing health problems. The committee has found, not surprisingly, that there are serious shortages of nurses who are willing or able to work in such areas, and to care for patients in public hospitals and nursing homes. The shortages largely coincide with the lack of adequate medical facilities and services for many low-income people and the elderly. Many of the root causes lie in the nation's health care financing arrangements. Possible solutions to this overriding national health care problem are beyond the scope of the committee's assignment, but we have, nonetheless, identified actions closely related to the committee's charge that would help to encourage nurses to practice in underserved areas and to work with the elderly and other underserved populations.

## Alleviating the Maldistribution of Nurses by Educational Outreach

### RECOMMENDATION 9

> To alleviate nursing shortages in medically underserved areas, their residents need better access to all types of nursing education, including outreach and off-campus programs. The federal government should continue to cosponsor model demonstrations of programs with states, foundations, and educational institutions, and should support the dissemination of results.

There can be no major expectation that the nurse labor market will improve significantly in inner-city and rural areas unless concerted actions are taken to develop an indigenous supply. The greatest potential for relieving such shortages lies in attracting into nursing--and advancing within the profession--people who live in shortage areas.

Many potential candidates, however, cannot relocate or commute to places where they may find available nursing education suitable to their career goals and circumstances. New forms of communication technology offer opportunities for present programs to engage in nursing education, including advanced nurse training and continuing education. They have not been sufficiently exploited. Various forms of outreach programs can be designed to suit the requirements and convenience of students who, for reasons of family, residence, or the need to continue employment while studying, cannot readily attend existing campus programs. Where prototypes of such programs are now in existence, evaluation and dissemination of results should be supported by the federal government. Where, because of special difficulties, promising efforts require encouragement through modest financial support, the government should participate financially in a small number of model demonstrations.

## Encouraging Consortia of Nurse Educators and Nurse Employers in Shortage Areas to Increase Minority Student Opportunities

RECOMMENDATION 10

To meet the nursing needs of specific population groups in medically underserved areas and to encourage better minority representation at all levels of nursing education, the federal government should institute a competitive program for state and private institutions that offers institutional and student support under the following principles:

- Programs must be developed in close collaboration with, and include commitments from, providers of health services in shortage areas.
- Scholarships and loans contingent on commitments to work in shortage areas should be targeted, though not limited, to members of minority and ethnic groups to the extent that they are likely to meet the needs of underserved populations, including non-English-speaking groups.

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Minority groups in the population, including new immigrants, are particularly disadvantaged both in their access to health services and in their access to educational opportunities in nursing. The committee recommends scholarships and loans for these purposes contingent on service commitments to shortage areas, although some members questioned the effectiveness or the equity of such provisions. Strategies to develop minority manpower to provide more adequate nursing services in medically underserved areas have been stated as goals, though inadequately supported by past legislation. These goals require re-emphasis and new approaches through a redirection of authorization and funding available under the Nurse Training Act.

Thus, in addition to general educational outreach efforts, nurse educators and health care employers should jointly develop programs to ensure that students are recruited from these special groups, that they will be given employment preference, and that they will gain clinical experience in shortage area facilities, e.g., rural and inner-city hospitals, nursing homes, and public health clinics. We believe that educational programs and health care facilities by working together in consortia can be successful in designing programs to recruit well-motivated students who will be attracted by improved prospects of future employment. The facilities themselves may benefit by work-study arrangements that will assure a future continuing supply of newly graduated nurses who live in the vicinity and are already familiar with their operations. Patients will benefit under the care of nursing service personnel who are more likely to be familiar with their health needs and life styles.

## Adequate Revenues for Inner-City Hospitals

### RECOMMENDATION 11

> Differential allowances in payment should take into account the special burdens on inner-city hospitals that demonstrate legitimate difficulties in financing services because of disproportionate numbers of uninsured or Medicaid and Medicare patients. Federal, state, and local governments and third-party payers should pay their fair shares of amounts necessary to prevent insolvency and to support acceptable levels of service, including nursing care.

Many inner-city public hospitals (that is, county-, city-, or state-owned), and some inner-city voluntary hospitals bear a primary burden of serving the unsponsored poor. They generally also serve disproportionately large numbers of Medicare and Medicaid patients for whose care they may not recover full payment of necessary expenditures. Many of these hospitals are teaching institutions affiliated with academic health centers and serve as regional referral centers for very sick patients requiring extraordinary inpatient medical and nursing attention. On an outpatient basis, they also provide a heavy volume of episodic primary care and emergency room services to otherwise medically underserved persons.

Failure of federal and state governments to cover certain services, or to allow payment sufficient to recover necessary outlays for services that are covered, threatens the existence of this essential part of the nation's health services structure. It stands in the way both of good patient care and of improving poor physical plant and general working conditions that contribute to the traditional difficulties these institutions encounter in recruiting and retaining nurses.

The service missions of some inner-city hospitals may result in justifiably higher costs and lower revenues than those in institutions classified as comparable in size or scope of service. Differential payments should take these factors into account. Although differential payments cannot assure an adequate nursing supply, they may be necessary to maintain institutional solvency. When new methods of payment are developed, it will be important to allow for the expense of service and management improvements to redress past deficiencies. By making service improvements possible, such payments may promote attainment of more competitive salary structures and better staffing of nursing services.

## Nursing Education for Care of the Elderly

### RECOMMENDATION 12

The rapidly growing elderly population requires many kinds of nursing services for preventive, acute, and long-term care. To augment the supply of new nurses interested in caring for the elderly, nursing education programs should provide more formal instruction and clinical experiences in geriatric nursing. Federal support of such efforts is needed, as well as funding from states and private sources.

The most rapidly growing segment of the population--the elderly--is a group particularly in need of the many services that nurses can provide. Those among the elderly who are age 75 and older are the most prone to multiple disabilities and chronic diseases. They use hospital, nursing home, and home care services at rates double or triple those of the population as a whole. Elderly patients are found in almost all health care settings. Their needs for care range from preventive, acute care, and rehabilitative services that help them maintain maximum independent functioning to care that eases the course of terminal illness and its impact on both patient and family. Nursing students need realistic preparation to dispel common misconceptions about the problems of the elderly, including attitudinal orientation that will enable them to provide the most effective care in all institutional settings and in patients' homes. Neither basic nor advanced nursing education programs yet focus sufficiently on academic preparation and clinical experiences in geriatrics.

## Upgrading Existing Staff in Nursing Homes

RECOMMENDATION 13

> Nursing service staffs in nursing homes certified as "skilled nursing facilities" and in other institutions and programs providing care to the elderly often lack necessary knowledge and skills to meet the clinical challenges presented by these patients. Such facilities, in collaboration with nursing education programs and other private and public organizations, should develop and support programs to upgrade the knowledge and skills of the aides, LPNs, and RNs who work with elderly patients. States should assist vocational and higher education programs to respond to these needs. Federal support of such programs should be maintained.

Today in nursing homes there are large numbers of licensed nurses as well as aides and orderlies whose education and training did not provide them with the special knowledge needed to care for elderly patients who require skilled nursing. A cost effective way to improve the quality of care for the close to a million patients in these settings would be to provide staff already engaged in their care with additional in-service training or continuing education in geriatric nursing. However, in many localities adequate financing, program, and faculty resources are lacking and must be developed.

## Adequate Payment for Long-Term Care

RECOMMENDATION 14

> The federal government (and the states, where applicable) should restructure Medicare and Medicaid payments so as to encourage and support the delivery of long-term care nursing services provided to patients at home and in institutions. For skilled nursing facilities, such payment policies should encourage the continuing education of present staffs and the recruitment of more licensed nurses (RNs and LPNs), and should permit movement toward a goal of 24-hour RN coverage.

Private insurance rarely offers benefits to cover the costs of health services that patients require for long-term illnesses and disabilities, either in their homes or in nursing homes. Medicare benefits, too, are almost entirely limited to acute care services. While Medicaid provides extensive benefits for the destitute elderly in nursing homes, in most states restrictive payment practices appear to discourage the employment of licensed nurses (RNs and LPNs).

Among the nursing homes certified for payment under the Medicaid and Medicare programs, slightly less than two-thirds of the patients are in homes certified either as a skilled nursing facility (SNF) only, or as some combination of SNF and intermediate care facility (ICF). Patients in such institutions usually are severely disabled and frequently are disoriented. Their conditions often require expert nursing services. By far the largest proportion of nursing service personnel in SNFs and combined SNF/ICFs are aides. Licensed nurses (RNs and LPNs) are responsible for their supervision, as well as for the direct care of patients, for recordkeeping, and for decisions about emergency situations that usually must be made with no physician in immediate attendance. Federal certification requirements call for only minimal RN staffing, i.e., in SNFs a full-time RN on the day shift every day of the week. Facilities have few incentives to exceed minimal staffing standards because such standards are likely to influence strongly the basis on which payment levels are calculated in the Medicaid program. Given the magnitude of nursing responsibilities for SNF patients, the committee believes that regulations and payment systems should be modified to advance toward a goal of 24-hour RN coverage.

## Legal and Reimbursement Barriers to Expanded Nursing Practice

RECOMMENDATION 15

> There is a need for the services of nurse practitioners, especially in medically underserved areas and in programs caring for the elderly. Federal support should be continued for their educational preparation. State laws that inhibit nurse practitioners and nurse midwives in the use of their special competencies should be modified. Medicare, Medicaid, and other public and private payment systems should pay for the services of these practitioners in organized settings of care, such as long-term care facilities, free-standing health centers and clinics, and health maintenance organizations, and in joint physician-nurse practices. (Where state payment practices are broader, this recommendation is not intended to be restrictive.)

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Nurse practitioners (NPs) are nurses whose education extends beyond the basic requirements for licensure as an RN and prepares them for expanded nursing functions in diagnostic and treatment needs of patients, as well as in primary prevention and health maintenance measures. At the beginning of 1983, there were about 20,000 NPs, of whom about 2,600 were nurse midwives. Many of them serve in rural and inner-city communities, especially with underserved populations, such as migrant workers, low-income mothers and children, and the elderly.

The provisions of some state practice acts have slowed or prohibited this expanded nursing practice, and varying degrees of limitation on payment for their services by Medicaid, Medicare, and third-party payers often prevent payment even for legally authorized services. Approximately half the states now provide some type of reimbursement under their Medicaid programs for physician extender services provided both by NPs and physician assistants. Since 1977, the Rural Health Clinic Services Act waives payment restrictions in the Medicare and Medicaid programs under defined safeguards if such physician extenders practice in certified rural health clinics located in designated underserved areas.

When they are employed in organized settings, NPs and nurse midwives have been shown to contribute to productivity gains and cost reductions. Even with the anticipated ample increases in physician supply, it is likely that NPs will be needed to serve hard-to-reach populations, to facilitate new organizational arrangements for providing health care in cost effective ways, especially in practice settings that operate within fixed budgets, and to augment the quality of care provided in nursing homes. Continued funding is needed for NP training, weighted toward supporting the preparation of RNs most likely to practice in underserved areas, in nursing homes, and in caring for the elderly in other settings. Thus, special attention should be directed to training as nurse practitioners RNs who already live in underserved areas or who work in long-term care settings.

Congressional Question Three: WHAT IS THE RATE AT WHICH AND THE REASONS FOR WHICH NURSES LEAVE THE NURSING PROFESSION? WHAT ACTIONS COULD BE TAKEN TO ENCOURAGE NURSES TO REMAIN OR RE-ENTER THE NURSING PROFESSION, INCLUDING ACTIONS INVOLVING PRACTICE SETTINGS CONDUCIVE TO THE RETENTION OF NURSES?

## Improving the Use of Nursing Resources

RECOMMENDATION 16

> The proportion of nurses who choose to work in their profession is high, but examination of conventional management, organization, and salary structures indicates that employers could improve both supply and job tenure by the following:
>
> - providing opportunities for career advancement in clinical nursing as well as in administration
> - ensuring that merit and experience in direct patient care are rewarded by salary increases
> - assessing the need to raise nurse salaries if vacancies remain unfilled
> - encouraging greater involvement of nurses in decisions about patient care, management, and governance of the institution
> - identifying the major deterrents to nurse labor force participation in their own localities and responding by adapting conditions of work, child care, and compensation packages to encourage part-time nurses to increase their labor force participation and to attract inactive nurses back to work.

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The committee found that the problems of retention in the profession and high turnover in hospitals are less severe today than commonly believed. More than three out of every four RNs holding current licenses are actively engaged in nursing. Only about 5 percent have left nursing for other types of employment. A major reason labor force participation rates are high--having risen 6 percentage points in the last 3 years--may be that the profession affords the option of part-time and evening or night work for nurses with family responsibilities. However, the committee believes that many institutions have opportunities to further increase the effective participation of nurses in the part-time and inactive supply. Investments in measures to accomplish this goal are especially pertinent in areas of local shortage.

Turnover rates apparently are lower today than in the past. Although precise data are not systematically and comprehensively available, the average turnover in RN positions does not appear to be very much higher now than it is for women in any other stressful occupation. Much of the recent improvement has come about because employers engaged in strenuous recruitment campaigns and in the use of temporary nursing agencies have come to realize that strategies for retention are essential. Frequently they are more cost effective than alternatives that reinforce competition between hospitals for nurses inclined to change jobs in their search for better career opportunities, better working conditions, or better compensation.

Congress asked this study to suggest actions involving practice settings that would be conducive to the retention of nurses. Our conclusions focus on the responsibility of health care management to engage in analysis of the effect of its decisions--its actions and its lack of action--that cause nurses to enter and leave employment.

Of particular concern is the necessity for employers to retain experienced nurses. In light of the growing complexity of hospital care, their contributions should not be undervalued. Despite recent gains in the earnings of nurses, continuing activity is required to improve career opportunities and work environment. RNs earn significant promotions in hospitals today largely by moving into supervisory and management positions. Attention must also be given to promotions and salaries progressively adjusted to reward merit and experience in direct patient care.

## Cost Accounting for Nursing Services

RECOMMENDATION 17

Lack of precise information about current costs and utilization of nursing service personnel makes it difficult for nursing service administrators and hospital managers to make the most appropriate and cost effective decisions about assignment of nurses. Hospitals, working with federal and state governments and other third-party payers, should conduct studies and experiments to determine the feasibility and means of creating separate revenue and cost centers for direct nursing care units within the institution for case-mix costing and revenue setting, and for other fiscal management alternatives.

As cost containment pressures force hospital management to become more skilled at using resources productively, it becomes important that managers have the tools to identify nursing revenue and to allocate nursing costs accurately and that systems be developed especially to enable nurse management to accept responsibility for using nursing service staffs most effectively. To achieve these goals, management needs to develop much more accurate methods for disaggregating revenue and costs associated with nursing.

In the absence of greater operational experience and evaluation of effects, the committee can only conditionally endorse the concept of separate cost/revenue centers for nursing activities, but strongly recommends federal sponsorship and assessment by the hospital industry (with third-party payer encouragement) of experiments with methods potentially applicable to different types of providers under varying payment arrangements. This will require studies to determine the information requirements, costing procedures, effects on the delivery of nursing services, and cost impact of such developments.

## A Center for Nursing Research

RECOMMENDATION 18

> The federal government should establish an organizational entity to place nursing research in the mainstream of scientific investigation. An adequately funded focal point is needed at the national level to foster research that informs nursing and other health care practice and increases the potential for discovery and application of various means to improve patient outcomes.

A substantial share of the health care dollar is expended on nursing care, and yet there is a remarkable dearth of research in nursing practice. The federal government's principal nursing research initiative--$5 million annually--is not at a level of visibility and scientific prestige to encourage scientifically oriented RNs to pursue careers devoted to research of direct applicability to the problems that nurses confront in patient care. The lack of adequate funding for research and the resultant scarcity of talented nurse researchers have inhibited such investigation.

The committee believes that a center of nursing research is needed at a high level in the federal government to be a focal point for promoting the growth of quality nursing research. Such an organizational base, adequately funded, would provide necessary leadership to expand the pool of experienced nurse researchers who can become more competitive for general health care research dollars. It would also promote closer interaction with other bases of health care research.

## Studies of the Competencies of RNs Prepared in Different Types of Education Programs

### RECOMMENDATION 19

Federal and private funds should support research that will provide scientifically valid measurements of the knowledge and performance competencies of nurses with various levels and types of educational preparation and experience.

Many different pathways in nursing education lead to initial licensure as an RN. Nurse educators, nursing service administrators, and other nurse employers often have different perceptions about the outcomes from these different educational inputs and, more fundamentally, on the outcomes that should be expected, both in the short and long term.

As with most other kinds of postsecondary education, there is little empirical evidence on the performance differences of the graduates of these different types of nursing education programs according to established measurable criteria of knowledge, skills, and range of competencies. This creates problems for nurse educators planning curricula to encourage educational advancement, for nursing service administrators trying to utilize RNs and LPNs most efficiently, and for the various organized groups within nursing who are seeking to establish new levels of licensure or to retain the current ones. The current lack of consensus on objectives and performance measures and evidence seriously handicaps the efforts of higher education bodies and state university systems attempting to allocate resources for nursing education in ways that will best match demand or needs for nurses with different kinds of competencies.

## Evaluation of Promising Management Approaches

### RECOMMENDATION 20

As national and regional forums identify promising approaches to problems in the organization and delivery of nursing services, there will be a need for wider experimentation, demonstration, and evaluation. The federal government, in conjunction with private sector organizations, should participate in the critical assessment of new ideas and the broad dissemination of research results.

Although individual health care institutions often develop better approaches to problems in the organization and delivery of nursing services, there is a dearth of systematic information on their generalizability. The committee recommends that the hospital industry and the professions of nursing and medicine develop a concerted effort to continue the work begun by the National Commission on Nursing to identify and assess existing experience with proposed innovative solutions. We also conclude that there is a federal role in stimulating innovation by disseminating information, by according national recognition to model solutions, and by supporting more rigorous evaluation than is likely to be employed by the industry itself. By focusing federal attention on these areas of research, the effect will be to draw the interest of other sources of support in the private sector.

## Information for Future Monitoring of the Nation's Nurse Demand and Supply

RECOMMENDATION 21

> To ensure that federal and state policymakers have the information they need for future nurse manpower decisions, the federal government should continue to support the collection and analysis of compatible, unduplicated, and timely data on national nursing supply, education, and practice, with special attention to filling identified deficits in currently available information.

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In order to maintain the necessary capability for monitoring the future balance between the nation's demand and perceived needs for licensed nurses (RNs and LPNs) and the supply, analysts depend on continuing streams of reliable national information from many sources. Some is collected periodically, some occasionally. Some is badly outdated, as in the instance of survey information concerning LPNs.

Data collection and analysis require the continued support of the federal and state governments and/or professional associations. The collection of new data to yield information not now available may require some rearrangement of priorities within available funding. In the course of this study, we have identified serious gaps in such areas as the costs and sources of financing of nursing education, nursing education curricula, the supply and distribution of LPNs, and the staffing of nursing homes.

The federal government, in cooperation with the nursing profession, nursing organizations, health care institutions, and state governments, should continue to provide leadership in nurse manpower data collection in order to maintain and improve definitional conformity, to provide a sense of priorities, and to minimize duplicative efforts.

## Costs and Financing to Implement the Recommendations

The committee has kept in mind the ever increasing economic pressures on public budgets and the concomitant emerging constraints on health care providers and educational institutions. We have culled from many desirable proposals those of less than urgent priority. We believe that each recommendation presented would require financial support for implementation. In combination, they represent a concerted public-private strategy for the effective use of the nation's health care resources. They build on solid foundations of policy reassessment and, thus, are designed to obtain maximum return from investments in nursing education and nursing services.

Three sources of federal support for the recommendations are discussed below: continued funding under the NTA, as amended; continued funding of student support for general higher education; and payment for services under Medicare and Medicaid. Specific costs of recommendations to the federal government are assessed only for the first source, the one that deals exclusively with nursing. The committee has not attempted to estimate expenditures needed to support recommendations concerning aid to secondary education or improvement in Medicare and Medicaid.

Support for recommended activities within the scope of the NTA objectives can be accommodated with modest additional sums, assuming continued authorization of the NTA and redirection of some of its existing provisions.

We estimate that our various recommendations for the strengthening and redirection of NTA programs could be implemented if funding for the NTA is restored to a level of about $80 million--the approximate average of annual appropriations between 1980 and 1982. This includes restoration of federal support for graduate education and other advanced nurse training to the average 1980-1982 level of $40 million. It also includes the added costs of improving access of the disadvantaged to nursing care and nursing education, of special project grants or contracts to support demonstrations and encourage new programs of educational and clinical collaboration, of outreach to minorities, of off-campus programs, of improvements in curricula to increase students' abilities to serve the elderly, of continuing education programs to upgrade skills of nursing home personnel, and of certain employer experiments in the better management of nursing resources.

The costs of implementing the committee's recommendations for stronger federal support of research and data collection involve modest increments in expenditures. For example, an increase on the order of $5 million per year for research could have a substantial impact in stimulating growth of capacity for research on nursing-related matters. A similar amount would greatly strengthen federal-state planning efforts for manpower studies and resource allocation. Many such activities primarily would entail redirection of effort.

Levels of expenditure for non-NTA programs are beyond the capacity of this study to quantify, except in terms of existing general levels of effort. We examined some problems, for example, those of inner-city hospitals and of nursing care for the elderly, that we felt unable to ignore but whose solutions would require substantial resources not fairly attributable to nursing even though nursing improvements indirectly may be at stake.

The committee also has presented strategies that private sector groups and institutions should pursue, such as improving the management of nursing personnel, attracting to a career in nursing students from nontraditional sources, and improving collaboration between nursing education and nursing service. To encourage such efforts, we recommend modest federal demonstration, evaluation, and dissemination expenditures under the NTA authority in the range of $1-2 million per year. Of course, there will be costs to others engaged in implementing these recommendations, but we expect that anticipation of either commensurate long-run savings or associated benefits to patients and to educational and employing institutions will be considered worth the cost.

In summary, the budgetary impact of the committee's recommendations entails (1) modest increases in essential expenditures under the NTA directed at resolving certain particular nurse shortages, (2) holding the line against possible erosion of outlays for higher education generally at both federal and state levels, and (3) modifying payment systems of public and third-party payers to permit providers of service to the poor and elderly to become financially secure and, thus, to increase the quality of their nursing services.

## CHAPTER I

# Nursing Services and Nursing Education: An Overview

Nursing in the United States is characterized by great diversity. This is reflected in the scope of nursing responsibilities and activities, in levels of personnel, in organization of services, in educational preparation, and in financing of education. An appreciation of this diversity is necessary to provide the context for the findings and recommendations the committee presents throughout the remainder of this report in answer to our study charge.

This chapter, after outlining the broad range of responsibilities of registered nurses (RNs), first reviews their roles in relation to those of licensed practical nurses (LPNs) and other members of the typical organized nursing service staff, and how staffing mix and roles may vary among and within the different settings where patients receive direct care. Next, it describes the educational programs that prepare generalist RNs and those that prepare LPNs, as well as some of the issues currently under debate about such education. The discussion then moves to the responsibilities and educational preparation of RNs in the profession's advanced positions--the managers of nursing services, nurse educators, clinical nurse specialists, and nurse researchers. The chapter concludes with a historical review of the respective roles of federal and state governments and private sources in the financing of nursing education.

## The Diversity of Registered Nurses' Responsibilities

Nursing education must supply the nation with RNs prepared for a wide range of roles and responsibilities: providing direct care to patients in hospitals, nursing homes, and patients' homes; helping to safeguard the health of community and school populations; assisting with ambulatory care of individuals and families; performing clinical nurse specialist services; administering nursing services at both middle and top management levels; conducting nursing research; and providing professional and educational leadership to the profession.

Responsibilities of RNs vary greatly among the different settings in which they practice. The daily round of activities of the acute care hospital staff nurse bears scant resemblance to that of the psychiatric hospital nurse, the public health nurse, the nurse educator, the nurse administrator, the pediatric nurse practitioner, the visiting nurse, the school nurse, or the nurse researcher. In hospitals and nursing homes, major activities focus on the care of sick patients confined to bed. But in many other settings, RNs work with ambulatory patients or, as in schools and industry, with presumably healthy people. Here, as in most other patient care settings, the RN has an important role in health promotion and disease prevention. In still other settings, in the roles of teaching, administration, consultation, and research, RNs' major activities involve nursing students, other nursing staff, and colleagues from non-nursing backgrounds.

Even among institutions and agencies of the same general type that differ in geographic location and size, the functions of RNs are strikingly diverse. The activities of the public health nurse in a small town health department are quite different from those of her counterpart in the health department of a large city; the challenges to nursing school faculty in a university, where research and publication are expected, are quite different from those to faculty in a 2-year community college; the wide variety of daily activities of RNs in small rural hospital are different from the more narrowly differentiated activities of their counterparts in large urban hospitals and medical centers whose patients seek care for multiple or highly complex conditions.

In such large hospitals, many RNs have highly specialized responsibilities. As in-service instructors, they manage and conduct orientation, staff development, and continuing education for RNs and all other nursing staff personnel; RNs with advanced clinical training provide consultation and patient care in clinical nursing specialities, such as coronary care or renal dialysis. At the staff nurse level, where most direct patient care is handled, a large proportion of the RN staff may be monitoring patients on complex life support systems in various types of intensive care units, while others will be at the bedside caring for patients with widely differing physical and emotional needs in medical, surgical, pediatric, obstetrical, and psychiatric units of the institution. Still others are dealing with critical trauma in the hospital emergency room.

In every hospital the staff RNs monitor, record, and respond to the changing status of their patients. They are responsible for assessing patients' nursing needs and for making, implementing, and modifying nursing plans of care as conditions change. This includes instruction of patients and families in self-care. Supervisors and head nurses in middle management positions coordinate all activities that affect the care of patients on the clinical units within their jurisdictions.

New roles are emerging for nurses in community nursing. Nurses are now involved in programs dealing with developmental disabilities, hypertension detection and control, midwifery, emergency treatment for rape victims, substance abuse, and counseling to the dying and their families. They are increasingly involved in home care.

## Variety of Nursing Service Personnel

In the nation's approximately 7,000 hospitals, 19,000 nursing homes,* and large numbers of health centers, visiting nurse services, and other organized clinical settings, nursing personnel typically work in formally organized nursing services administered by RN nursing service directors. In hospitals, these directors of nursing services and their assistants typically manage nursing services with hundreds of staff personnel whose education and skills range through those of specialist and generalist RNs, and those of LPNs, to simple staff support by such ancillary personnel as aides and orderlies.+

Registered nurses are the single largest component of health care personnel in the United States. There are also very large numbers of LPNs and aides. In 1980, approximately 1.3 million RNs and more than half a million LPNs were employed and probably more than 850,000 aides, orderlies, and attendants.[1,2,3,4]

The nursing service staff constitutes the largest single personnel component of a hospital. In hospitals, as well as in many other institutional settings, both administrative and staff RNs work in close association with physicians; with many different allied health workers, such as physical therapists and laboratory technicians; and with housekeeping, building maintenance, and other support personnel. Effective RN relationships with physicians, with other health providers, and with support staff play a large part in determining the productivity and efficiency of services.

By the terms of their legal licensure or by custom, nursing personnel are expected to perform at different levels of responsibility and functions. Brief descriptions follow.

### The Registered Nurse

State boards of nursing license RNs as professionals, as distinct from practical nurses, who take a different licensing examination.

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*The term "nursing home" applies to facilities that provide long-term care to patients with various degrees of impaired health and/or mobility. As with hospitals, the term includes a range of institutions, licensed to provide different levels of care. In this report, "nursing home" connotes the generic long-term care facility. Where applicable, the report also refers to "skilled nursing facilities" (SNFs) and "intermediate care facilities" (ICFs). These subsets of nursing homes are certified as qualified to receive payment for care to Medicare patients (SNFs) and for Medicaid patients (SNFs and ICFs) under the provisions of the Social Security Act and state laws and regulations. As their names imply, SNFs care for patients whose conditions appear to call for more skilled and/or extensive care than patients in ICFs.

+In a few states, practical nurses are licensed as "vocational nurses," (LVNs). However, for the purpose of simplicity, the report refers to both licensed practical nurses and vocational nurses as LPNs.

Besides providing direct care to patients, RNs manage all nursing services and educate all echelons of nursing personnel. Many RNs figure importantly in public health, and some in the formulation of national health policy. Licensure as a RN is the first and basic credential for all these roles; additional credentials are customary for some of them.

In 1980, about 20 percent of the nation's approximately 1.3 million employed RNs were engaged in nursing service management, education, or leadership in special areas of clinical nursing practice designed to strengthen and support either directly or indirectly the delivery of basic nursing care.[5] Most of the remainder--approximately 915,000--were primarily providing general nursing care to patients. Of these, more than 735,000 were in staff or head nurse positions in hospitals and nursing homes. In these roles they were expected not only to have high level technical nursing skills and to work closely with physicians, but also, as we have seen, to assess patients' nursing needs on a 24-hour basis and to plan, coordinate, and document the nursing care given by other nursing and non-nursing personnel. In so doing, they were expected to exercise judgments and make informed decisions in all aspects of the nursing care that patients under their charge received and to instruct and provide emotional support to patients and their families. Almost 50,000 RNs were staff or head nurses in public or community health agencies. About an equal number worked in physicians' offices.

As Figure 1 illustrates, by far the largest proportion of employed RNs in 1980, 66 percent, worked in hospitals. Another 8 percent worked in nursing homes, and about 7 percent in one or another public

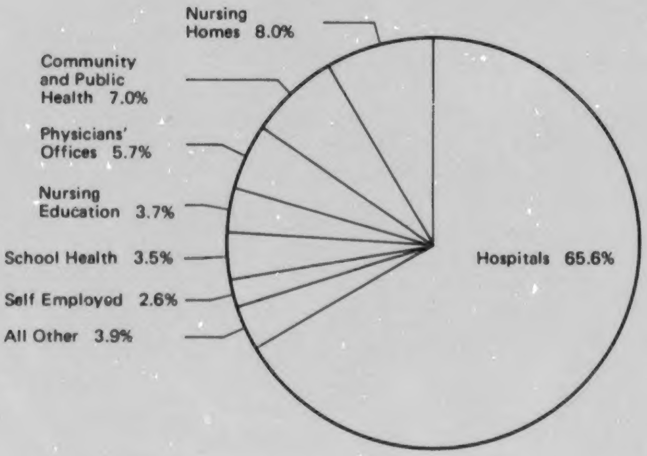

FIGURE 1 Where registered nurses worked in 1980.

or community health setting, such as health departments, visiting nurse services, and health centers. Less than 3 percent of RNs were self-employed; most of them were private duty nurses. Physicians' and dentists' offices and health maintenance organizations (HMOs) employed slightly less than 6 percent of the RN work force; student health services employed another 3.5 percent. Nursing education accounted for another 3.7 percent. The remainder worked in such disparate fields as occupational health in industry, government agencies, and nursing organizations.[6]

More than three of every four RNs who held licenses in 1980 were employed in nursing, but almost a third worked only part time. The fact that almost all RNs are women obviously influences the nature of their participation in the work force. About 97 percent of the almost 1.7 million RNs who held active licenses in that year were women, with a median age of about 38. More than 70 percent were married, and most had children living at home. Their family responsibilities appeared to make part-time work attractive; almost two out of three RNs who worked full time either were not married or had no children living at home.[7] All in all, however, as we will see in Chapter II, the RN labor participation rate has been increasing steadily and almost exactly parallels that of other women with post-secondary education.

## The Licensed Practical Nurse

State boards license practical or vocational nurses to provide nursing services under the supervision of RNs and/or physicians. In 1980 approximately 300,000 LPNs were employed in hospitals, where they performed routine nursing tasks, largely under supervision.[8]

In 1977, the National Nursing Home Survey estimated that 97,500 LPNs were employed in nursing homes.[9] In these settings they have greater responsibilities than they do in hospitals, because, as is described in Chapter VI, they often are the only licensed nurses on the premises. The survey found that only 22 percent of such institutions have RNs on duty around the clock.[10]

No recent data are available to show the number and distribution of LPNs employed outside of hospital and nursing home settings. In 1974, private duty nursing and work in physicians' offices accounted for 14 percent of their employment.[11] Nor is current detailed information available on the demographic characteristics of LPNs. However, as with RNs, the great majority of LPNs are women. In recent years, practical nurse education programs have been graduating older students; in 1980, more than one-third of newly licensed graduates were between the ages of 30 and 50, and about one-fifth between the ages of 25 and 29.[12]

## Ancillary Nursing Personnel

Aides, orderlies, and attendants are unlicensed and may not necessarily be high school graduates. Their training typically is provided by the institutions where they work, although vocational programs in some states and localities offer brief training programs. In addition to this traditional core of aides, some undetermined numbers of nursing and other health professional students help support their educational expenses by working in this capacity.

Approximately 386,000 aides were employed in the nation's hospitals in 1980 and 463,000 in nursing homes in 1977.[13,14] In hospitals, they carry out routine patient care tasks such as assisting in personal hygiene under the direction of either RNs or LPNs. In nursing homes, they often carry out a much wider variety of direct patient care tasks and functions.

Other nursing service personnel include unit clerks and managers employed to carry out a variety of administrative functions. Hospitals employed about 230,000 such personnel in 1980.[15]

## The Functions of Organized Nursing Services

Most efforts to arrive at generally applicable, standardized categorizations of the functions of nursing service personnel are so general as to be insufficiently informative or so detailed as to be unmanageable. However, the listing in Table 1, developed for use by hospital nursing service administrators in delegating responsibilities to various levels of personnel, provides an illustration of the range and scope of nursing service responsibilities and activities in hospitals. The frequencies of task occurrence, of course, depend heavily on patient mix. The distribution of assignments among RNs, LPNs, and aides depends on provisions of state licensure acts, staffing philosophy, the availability of personnel, and their experience and demonstrated capabilities. It also depends on the extent to which physicians, social workers, health educators, physical and respiratory therapists, nutritionists, and many other kinds of health personnel are present or absent in any particular institution at any particular time.

## Variations in Nursing Service Staff Mix

Nursing service staff account for a large share of the operating costs of hospitals and nursing homes. In hospitals, estimates of the proportion are about 30 percent. When these institutions face pressures to contain costs, ways to attain the most cost effective staffing are widely sought. In efforts to identify the most effective and efficient mixes, more than a thousand studies have examined various aspects of nursing personnel staffing.[16,17] Widely differing patterns are found in hospitals, ranging from all-RN staffs who carry out the entire range of nursing activities for patients assigned to them,[18] to configurations that depend on a few highly experienced nurses supported by large numbers of unlicensed auxiliary personnel--sometimes with special training as "technical aides."[19]

Some nursing service directors in multihospital systems predict

TABLE 1 Examples of the Responsibilities of Hospital Nursing Service Personnel

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I. Patient Assessment:
  1. Perform admission assessment--nursing history
  2. Perform physical assessment--skin, heart, abdomen, circulation, lungs
  3. Identify nursing needs of patients in various stages of health or illness
  4. Observe apparent change in patient's condition
  5. Analyze factors such as test results and come to a nursing diagnosis

II. Nursing Care Planning:
  1. Develop appropriate nursing care plan
  2. Evaluate changes indicated on patient care plan
  3. Establish priorities as demanded by a situtation
  4. Adapt nursing actions to meet needs of an individual patient

III. Interaction with MD:
  1. Interact and collaborate (discuss) with MD about patient's plan of care
  2. Contact MD regarding patient problems and/or change in condition
  3. Interpret MD orders
  4. Receive MD telephone orders
  5. Relate nursing orders to MD
  6. Assist MD with special procedures

IV. Supervision and Communication
  1. Assume charge of a unit
  2. Assume responsibility for a group of patients
  3. Supervise staff
  4. Assign others to care of patients
  5. Work closely with other patient care services (e.g., occupational therapy, physical therapy, speech therapy)
  6. Give "change of shift" report
  7. Participate in team conferences and nursing team rounds

V. Patient and Family Teaching:
  1. Orient patient to unit
  2. Teach patient and family about health problems (e.g., diabetes, colostomy care)
  3. Serve as patient advocate
  4. Support patient and family when in physical and emotional distress
  5. Reinforce teaching, give out information, help patient and family understand course of care (e.g., postop, preop, simple instructions)

TABLE 1 (continued)

VI. Documentation and Patient Care:
1. Initiate charting and review charts for completeness--sign name
2. Chart nursing care progress, if patient condition changes
3. Chart routine activities of daily living
4. Chart vital signs
5. Chart narcotics and narcotic counts

VII. Nursing Procedures:
1. Routine temperature, pulse, respirations
2. Routine blood pressure
3. Invasive procedures, i.e., nasogastric tubes, Cantor tubes, Miller-Abbot tubes, remove subclavian catheters, arterial lines, etc.
4. Maintain parenteral fluid flow, replace bottles, establish infusion rate
5. Observe and report infusion rate
6. Airway suctioning
7. Assist with intermittent positive pressure breathing, incentive spirometer, $O_2$ administration, etc.
8. Soak and sitz bath, etc.
9. Surgery preps, major lab, x-ray prep
10. Major dressing change--wound irrigation, suture removal, sterile dressing, etc.
11. Dressing changes after initial change, wound assessment, application of ACE bandages, decubitus care
12. CPR--Cardiopulmonary resuscitation
13. Advanced cardiac life support
14. Arrythmia detection

VII. (continued)
15. Handle special equipment required by patients (e.g., monitor, respirator
16. Give enemas and douches
17. Coordinate care during death and dying
18. Collect specimens, perform tests: stool, emesis, occult blood, clinitest, specific gravity, etc.
19. Turn, cough, deep breath

VIII. Medication:
1. Pass routine oral medications
2. Give IV medications
3. Give IM medications

IX. Direct Patient Care: Provide direct care to patient including personal hygiene needs, i.e., bedbath, backrubs, mouth care, changing bed, assistance with bedpan and voiding. Also includes transfer of patients from bed to chair and patient positioning
1. Class I patients
2. Class II patients
3. Class III patients
4. Class IV patients

X. Meet Patient's Nutritional Needs:
1. Pass meal trays
2. Pass drinking water
3. Assist with feeding

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SOURCE: Vandan, M.T. Measurement of task delegations among nurses by nominal group process analysis. Medical Care, 1982, 20(2), 154-164.

that in the medical centers of the future, in contrast to the ever growing numbers of RNs in the recent past, a few highly trained specialized clinical RNs will coordinate the care of a defined number of patients, supported by technical nurses and technicians. Today, however, hospitals for the most part employ a variety of mixes of RNs, LPNs, and auxiliary staff. Individual nursing service directors determine the proportions of the mix on the basis of their institution's mission, policies, and resources and their own perceptions of patients' needs.

## Variations By Setting of Care--Hospitals and Nursing Homes

Some of the complexities surrounding definition of the RN's role in relation to patients and to other nursing personnel can be illuminated by comparing the mix of nursing personnel staff in different settings of care. As Figure 2 illustrates, RNs constitute 46 percent of the nursing personnel in United States hospitals registered by the American Hospital Association (AHA),* in contrast to only 15 percent in nursing homes certified as skilled nursing

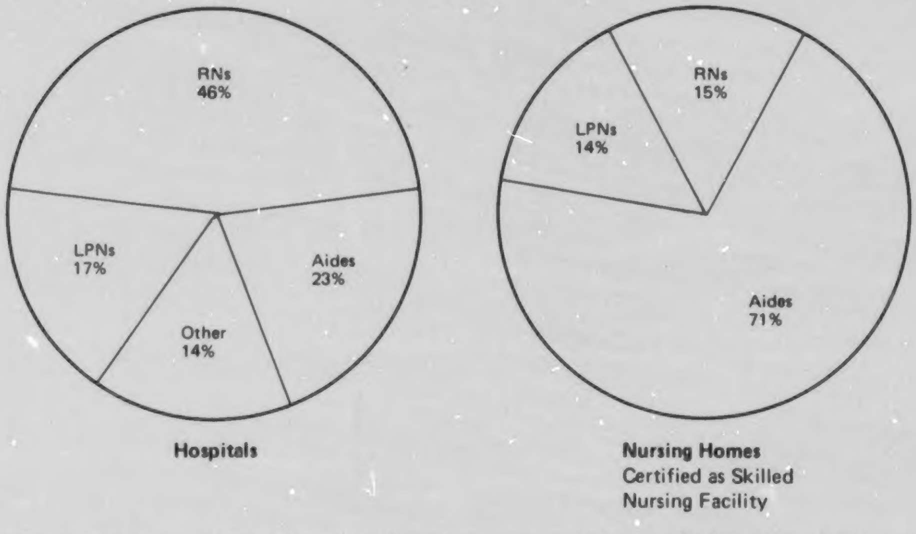

FIGURE 2 Mix of full-time equivalent personnel providing nursing services in U.S. registered hospitals and in SNF nursing homes.

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*The American Hospital Association membership includes approximately 6,000 hospitals and other patient care organizations in the United States and Canada and 24 hospital schools of nursing. In addition, the AHA has individual members.

facilities (SNFs).[20,21] The average hospital patient receives an average of 2.5 hours of RN time in a 24-hour period, but a study of nursing homes found that their patients receive RN care for an aggregate of 12 minutes in SNFs and 7 minutes in nursing homes certified to give intermediate care.[22]

Aides and other unlicensed ancillary nursing personnel constitute 71 percent of the nursing service staff in SNF nursing homes, but only 23 percent in hospitals. The proportion of LPNs is more nearly the same in both types of institutions--14 percent and 17 percent, respectively.

## Variation by Hospital Characteristics

Hospitals have widely varying characteristics. As would be expected, their mix of nursing services staff varies greatly according to the type of institution, geographic location, size, mission, and sources and amount of revenue. The annual surveys of hospitals conducted by the AHA reveal many of these differences. In 1980 for example, 49 percent of the full-time equivalent (FTE) nursing service personnel in general hospitals (acute care) were RNs and 21 percent were aides, while in chronic hospitals the proportions were almost reversed--21 percent RNs and 44 percent aides.* The proportions of LPNs were 18 and 17 percent, respectively, in the two types of institutions.[23]

Staffing mix differences among community hospitals in different geographic regions also are substantial. For example, in the AHA's western region, community hospitals averaged 52 percent FTE RNs and 18 percent aides, but in the southern region, FTE RNs averaged 41 percent and aides 25 percent. However, the proportion of FTE LPNs to total nursing service staff was about the same--17 percent and 19 percent, respectively.[24]

The proportion of RNs in the nursing staff services increases with increase in hospital size. In 1980, in small hospitals (50-99 beds), only 39 percent of the nursing service staff were FTE RNs compared with 53 percent in hospitals of 500 beds and more.[25] Conversely, the proportion of FTE LPNs decreased with increasing hospital size, dropping from 23 percent of the nursing personnel of small hospitals to 15 percent in the largest hospitals. On the other hand, the proportion of FTE aides and other nursing personnel remained fairly constant in hospitals of different sizes.

The ratios of RNs to other nursing personnel in hospitals and other settings suggest only part of the complex problem of diffe[illegible] roles and responsibilities. In its 1980 annual survey, the AHA for the first time delineated two categories of RNs--those who function in staff and head nurse positions in hospitals and those who function in management and clinical nurse specialist positions. In contrast to the wide variations in overall nursing service staff mix cited above, in general and chronic disease hospitals of all sizes and geographic locations, administrative and clinical specialist RNs consistently make up approximately 7-8 percent of the total nursing personnel. This means that in hospitals that have fewer total RNs to begin with, an even smaller number of RNs at the staff and head nurse level are available to deliver patient care. For example, when, for purposes of analysis, the advanced nurse positions are removed from the overall nursing personnel staff mix, RNs constitute only 15 percent of the nursing personnel in chronic hospitals compared with 42 percent in general hospitals, and RNs are only 32 percent of the nursing personnel in small hospitals compared with 44 percent in hospitals of 500 beds or more.

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*The number of full-time equivalent personnel (FTE) is calculated by adding half the number of persons employed part time to the actual number of those employed full time.

## Variation Within States and Within Institutions

National averages conceal a range of staffing patterns among hospitals of the same general type in the same state. For example, among 88 community hospitals in Virginia having patient care patterns more or less conforming to the national average and responding to a 1978 staffing survey, two had all RN nursing staffs, one had only RNs and aides, seven had only RNs and LPNs, and the remaining 78 had the traditional mixes of all three types of nursing service personnel.[26]

The proportions of RN staff can be expected to be adjusted to the types of services provided. Thus, staffing patterns vary greatly among the different nursing units of any individual institution. In some large public hospitals, as much as three-quarters of the available total RN staff are assigned to intensive care units and emergency services, their general care patients being left with only skeleton RN coverage.[27] In hospitals and nursing homes alike, the proportion of RNs to LPNs and aides is reported to be considerably higher during daytime shifts. There are frequent anecdotal reports of LPNs serving as charge nurses on night shifts.

The numbers and ratio of RN staff to other nursing personnel are obviously a strong determinant of the functions that RNs have time and resources to perform. These factors in relation to patients' nursing needs largely determine their actual day-to-day responsibilities and roles. For example, at one extreme, when a nursing home has only one RN for one 8-hour shift to serve 100 patients, about 40 percent of whom require intensive nursing care, this nurse's time will be mainly occupied by supervision and paperwork.* RNs in such settings have scant opportunity to assess these patients' nursing needs, to plan their care, to provide encouragement and support, to carry out complex nursing procedures, or to ease the passage of the dying. To the extent that such activities are performed, others must perform them. At the other extreme, when a hospital non-critical care nursing unit is staffed entirely by RNs with a ratio of one nurse to four patients on each shift, these RNs are likely to have the time to exercise the full range of nursing judgment and skills.

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*The National Nursing Home Survey in 1977 reported that 43.8 percent of residents "had received intensive nursing care" within the 7 days immediately preceding the survey. (Some measures of "intensive nursing care" included oxygen therapy, intravenous injections, and catheterizations.) From DHHS, NCHR. Nursing home utilization in California, Illinois, Massachusetts, New York, and Texas: 1977 national nursing home survey (see Reference 3 for complete citation).

## Education for Registered and Practical Nurses

Because no simple characterization of RN roles is possible, nursing education faces great challenges in preparing its students. As will be seen in later chapters, both the costs and the tasks of preparing fully functioning nurses appear to be shared between the institutions that provide their basic formal education and the employers who orient them to assume the specific responsibilities required in the particular situations of their practice.

Nursing students can prepare for RN licensure in any one of three kinds of programs: *diploma programs* in hospital schools of nursing (303 in 1981) offer a diploma after successful completion of 2-3 years of study after high school graduation, but no academic degree; *associate degree* (AD) nursing programs (715 in 1981), usually located in 2-year community colleges, lead to an AD in nursing; and *baccalaureate programs*, usually 2-year nursing majors in 4-year colleges and universities (383 in 1981), lead to a baccalaureate degree in nursing.

Until the early 1970s the majority of new graduates were prepared in diploma programs. Thus, of the RNs who held licenses in 1980, 54 percent had their highest educational preparation in such programs; 18 percent had been prepared in AD and 20 percent in baccalaureate programs. By 1981, however, as is illustrated in Figure 3, the graduation picture had dramatically changed. More than 82 percent of new nurse graduates in that year were prepared in the higher education system, either in AD or in baccalaureate programs.

All these types of basic nurse education programs undertake to prepare a generalist RN. The nature and extent of the differences and similarities among the baccalaureate, AD, and diploma educational pathways to RN licensures are not widely known. Although each of the 1,422 nurse education programs probably lists its curriculum requirements in catalogues, there are no compendiums of the information in a form that permits comparative analysis. Nor does the National League for Nursing (NLN), the accrediting body for all these programs, issue written quantitative or minimum requirements for numbers and distribution of curriculum hours and corresponding requirements for clinical experience that would permit such analysis[28]. However, the

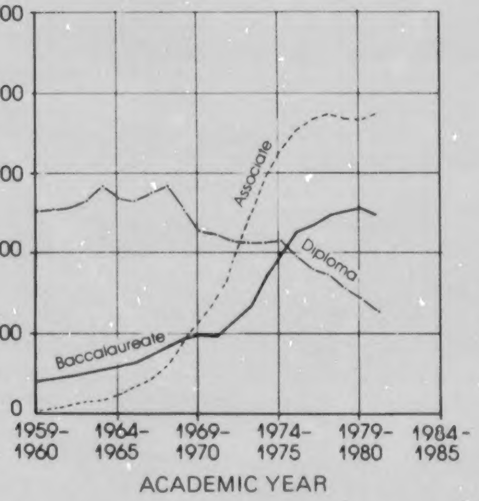

FIGURE 3 Trends in number of graduates of programs preparing for registered nurse licensure, 1960-1981.

accreditation review bodies of the NLN are reported to expect baccalaureate programs to offer some basic preparation in community health.*

One major distinction among the programs is clear. Only the attainment of the baccalaureate degree in nursing permits the graduate to progress to master's and doctoral degree nurse education. Slightly more than 5 percent of RNs in 1980 held such advanced nursing degrees.

Baccalaureate completion programs, specifically designed for RNs with diploma and associate degrees who wish to earn a baccalaureate are an increasingly popular type of nurse education. Such programs, sometimes referred to as "post-RN programs," usually require 2 or more years of study. Most are given in schools of nursing that also offer 4-year generic baccalaureate degree programs; others are separately organized. Graduations from such post-RN programs almost quadrupled between 1972 and 1981.[29] In another even more recent development in nurse education, hospital schools of nursing have been reaching out to combine in various ways with either AD or baccalaureate programs. The purpose is to allow graduates to obtain academic degrees while they retain the diploma schools' traditional emphasis on clinical experience. As of 1982, two out of every three diploma programs have developed or are in the process of developing such affiliations.[30]

Practical nurses receive their training in one of approximately

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*The National League for Nursing accredits all three types of programs leading to RN licensure, as well as post-RN programs and practical nurse programs. Its membership of 17,000 comprises organizations (primarily educational institutions) and individuals.

1,300 programs. These, too, vary in sponsorship and length. State boards of nursing usually accept candidates for the nationally standardized LPN examination who are high school graduates or have successfully completed high school equivalent programs and have had 9 months to 1 year of practical nurse training in an approved program. In 1980, over half the LPN programs were conducted in trade, technical, or vocational schools and more than one-quarter in junior and community colleges. The remainder were offered by hospitals. The proportion of hospital-sponsored programs has been declining, while those in community colleges have been rising.[31] Some AD programs prepare students for practical nurse licensure after the first year and for the RN examination after the second year.

## Relation of Type of Generalist Nurse Education to Licensure and Practice

Graduates of all three types of nurse education programs that prepare for RN licensure take the same standard national examination to obtain licensure in their respective states. According to annual surveys by the NLN of all newly licensed nurses 6-8 months after graduation, each of which usually elicits about 55,000 responses, more than 90 percent of the graduates from each of the three types of programs take positions in hospitals.[32] There, after an orientation period, all are customarily assigned to carry out the same kinds of direct patient care activities. Usually they are employed as staff nurses, sometimes as head nurses or charge nurses. For the past several years the NLN survey has consistently found that larger proportions of AD graduates reported having head or charge nurse positions (13.2 percent in 1980) than did either diploma graduates (8.6 percent) or baccalaureate graduates (7.7 percent).[33] The NLN report speculates that greater numbers of AD graduates may have attained such positions of responsibility early in their RN careers because of previous experience, as indicated by higher proportions who were older, married, and had families.

In regard to salary, the relative standing of newly licensed baccalaureate nurses appears to be more favorable. In 1980, the same NLN survey estimated that the median salary of all newly licensed RNs was $14,100. The median annual salary for baccalaureate nurses was about $400 higher; that for AD and diploma graduates, almost identical, was about $225 lower. Analysis also reveals that a higher proportion of baccalaureate graduates (41.8 percent) earned at levels of $15,000 and over than did AD and diploma graduates (31.8 and 30.7 percent, respectively).[34] These salary differences among the newly licensed graduates, however, do not appear to be commensurate with the differences in length of their educational preparation and its costs, which as Chapter III relates, are considerably greater for baccalaureate than for AD graduates.

## Differentiation in Employment Patterns

Over the longer term the investment by both nursing students and society in baccalaureate programs appears to offer nurses a more varied choice of careers. One way to look at the careers to which graduates of the three programs gravitate is to examine their types of employment at ages 35-39, a point in life when choices among alternatives have become more apparent than when they first left school. Table 2 shows that among baccalaureate nurses in that age group, more than 15 percent were employed in public and community health (a category that includes visiting nurse services, school health services, and occupational health), compared with only 9 percent of the diploma graduates and 6 percent of the AD graduates. Also, a far higher proportion of baccalaureate graduates were in nursing education. Only about 4 percent of baccalaureate graduates were working in nursing homes, a low-paying work setting.

TABLE 2 Percent Distribution of Registered Nurses Aged 35-39 Years in Selected Types of Employment According to Their Highest Levels of Educational Preparation, November 1980

| Type of Employment | Diploma | Associate Degree | Baccalaureate |
|---|---|---|---|
| Hospital | 47.5 | 67.4 | 45.4 |
| Nursing homes | 7.3 | 6.7 | 3.9 |
| Public and community health, student and occupational health | 9.0 | 6.1 | 15.4 |
| Nursing education | 1.2 | 0.6 | 4.3 |
| All others | 10.0 | 7.5 | 6.4 |
| Not employed in nursing | 25.0 | 11.7 | 24.6 |
| TOTAL | 100.0 | 100.0 | 100.0 |

SOURCE: Study analysis of data from National Sample Survey of Registered Nurses, November 1980.

Hospital and nursing home employers of RNs find other aspects of the findings reported in Table 2 to be of particular interest. Proportionately, only about half as many AD graduates in the 35-39 age group reported themselves to be "not employed in nursing" as did diploma and baccalaureate nurses. Also, more than two-thirds of AD graduates were working in hospitals, compared with less than half the diploma and baccalaureate graduates. Finally, nursing homes appeared to attract about the same proportions of diploma and AD graduates--considerably higher than the proportion of baccalaureate graduates.

The wider diversity of careers that appears to characterize baccalaureate RNs was observed in another NLN study that followed over time a panel of approximately 6,000 RNs who entered nursing in 1962. Ten years later, in 1972, 68 percent of diploma graduates and 66 percent of AD graduates were still in the direct patient care positions of staff and head nurse, compared with only 48 percent of baccalaureate prepared nurses. Almost twice as high a proportion of baccalaureate nurses were in teaching or administrative positions or held expanded nurse jobs such as nurse practitioner.[35] Analysis of the National Sample Survey of Registered Nurses, November 1980, shows that among employed RNs with 11 to 15 years of experience, 65 percent of diploma, 53 percent of AD, and 52 percent of baccalaureate graduates still held direct patient care staff level positions. However, as in the NLN study, a considerably higher proportion of baccalaureate RNs with these years of experience held administrative positions (8.5 percent) than did diploma RNs (5 percent) or AD RNs (3 percent).

## Differentiation by Type of Patient Care Activities

Most of the nursing literature conceptualizing the difference between the responsibilities for which the three RN educational tracks prepare nurses assumes that baccalaureate nurse education prepares RNs not only for advanced positions in nursing but also for activities in direct patient care that call for the exercise of independent professional judgment. In contrast, it is assumed that AD nurse education prepares for "assisting, technical" tasks.[36,37] The extent to which differentiation of patient care responsibilities actually occurs in practice is not known. However, responses of RNs to the National Sample Survey of Registered Nurses, November 1980 provide some evidence, based on the respondents' answers as to whether or not they performed certain activities set out in the survey questionnaire. For our study purposes, selected activities were grouped according to whether they appear to indicate some independence in decision making or whether they appear to indicate some form of assisting role. To sharpen the analytic framework, comparison of differences in these respects among the graduates of diploma, AD, and baccalaureate programs was based on the responses of experienced RNs (11 or more years experience) employed as staff nurses in hospitals providing direct patient care. The results are displayed in Table 3.

As can be seen, whatever the type of generalist nurse education background, among all staff RNs who provide direct care to patients a high proportion reported performing activities that suggest the independent exercise of judgment. There appear to be no marked differences in the activities nurses with different educational preparation performed. However, a somewhat higher percentage of AD nurses reported performing most of the listed activities, whether of a self-directed or assisting character, than did the diploma and baccalaureate nurses. This finding is difficult to interpret. It may mean that although all the respondents had the same title, staff

TABLE 3 Percent of Experienced Staff Nurses in Hospitals Reporting Performing Activities That Indicate Independent Judgment, by Highest Educational Preparation, November 1980

| Activity | Diploma | Associate Degree | Baccalaureate |
|---|---|---|---|
| Activities indicating independent judgment | | | |
| Obtaining health histories | 65 | 71 | 63 |
| Performing physical examinations using instruments (e.g., stethoscope, otoscope) | 17 | 18 | 17 |
| Performing some proportion of examinations | 43 | 47 | 41 |
| Instructing patients in management of defined illness | 67 | 70 | 67 |
| Instructing patients in health maintenance | 64 | 63 | 67 |
| Primary responsibility for follow-through on care | 46 | 50 | 48 |
| Assisting activities | | | |
| Assisting during patient exams | 70 | 75 | 56 |
| Administering medications | 78 | 81 | 71 |
| Sustaining and supporting persons during diagnosis or therapy | 62 | 72 | 57 |
| Implementing therapy | 57 | 59 | 59 |

SOURCE: Study analysis of data from National Sample Survey of Registered Nurses, November 1980.

nurse, those with baccalaureate and diploma preparation were more apt to be occupied in record keeping and other kinds of responsibilities that drew them away from direct patient care.

A parallel analysis of the responses of RN staff nurses in hospitals with only 1-5 years of experience also showed little difference in the percentage of nurses performing the various activities according to their educational background.*

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*These results and other details on the differentiation of RN employment, activity, and salary according to type of educational preparation may be found in Bauer, K.G., and Levine, E. Analysis of career differences among registered nurses with different types of nurse education. Background paper by the Institute of Medicine Study of Nursing and Nursing Education. Available from Publication-on-Demand program, National Academy Press, Washington, D.C., 1983.

## Debate Over Appropriate Generalist Nurse Education

Over the past two decades, there has been considerable controversy about the desirability of continuing three separate education pathways to prepare students for professional licensure as RNs and also about the role of education programs preparing students for practical nursing. Nursing leaders, through their professional association, the American Nurses' Association (ANA), have since 1965 been advocating a formal differentiation in the roles and titles of graduates of the AD and baccalaureate programs.* ANA takes the position that a baccalaureate degree in nursing should be the minimal educational preparation for entry into professional nursing practice. It holds that the AD graduate should be prepared for "technical" practice, should have a more limited scope of practice (as yet unspecified), and should function with direction from the baccalaureate prepared nurse. Although the ANA is silent on diploma programs currently preparing for RN licensure and on programs currently preparing for LPN licensure, by implication there would be no future place for either.

The ANA position derives from a statement of principles developed in 1965 that "the education for all who are licensed to practice nursing should take place in institutions of higher learning," and that "minimum preparation for technical nursing practice at the present time should be an AD education in nursing."[38]

In 1978, the ANA House of Delegates adopted the following formal resolutions to advance its position:[39]

- that the ANA ensure that two categories of nursing practice be clearly identified and titled by 1980;
- that by 1985 the minimum preparation for entry into professional nursing practice be the baccalaureate in nursing; and
- that the ANA, through appropriate structural units, work closely with state nursing associations and other nursing organizations to identify and define the two categories of nursing practice.

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*The American Nurses' Association is the professional organization of RNs. In August 1982 it had 163,724 members--approximately 10 percent of RNs holding active licenses. Its stated purposes are to (1) work for improvement of health standards and the availability of health care services for all people, (2) foster high standards of nursing, and (3) stimulate and promote the professional development of nurses and advance their economic and general welfare (ANA Bylaws as revised July 1982). The ANA also sponsors the American Academy of Nursing, the American Nurses' Foundation, and the Nurses Coalition for Action in Politics (N-CAP). In July 1982, the ANA House of Delegates adopted bylaws that change the ANA from an individual membership organization to a federation of state constituent members. The new federation structure will be fully operational in July 1984.

Most recently, in 1982 the ANA House of Delegates directed that "ANA move forward in the coming biennium to expedite implementation of the baccalaureate in nursing as the minimal educational qualification for entry into professional practice."

Hospitals and nursing home organizations, organizations representing AD and diploma RNs and their education programs, and organizations of practical nurses have opposed the ANA position. They believe that the current diversity of educational pathways responds to the needs of diverse practice settings where different kinds and mixes of nursing service personnel are employed. For example, the most recent official position of the AHA House of Delegates, adopted in August 1982, is that "the American Hospital Association reiterates its support for all three types of programs of nursing education: associate, diploma and baccalaureate. All three are needed to provide an adequate supply of nurses for hospitals."[40] At the same time, the AHA and other employers of nurses recognize the need for many nurses prepared for responsibilities in an ever more sophisticated health care system and support the goal of individual nurses to advance their education.

Some nursing organizations take somewhat intermediate positions. In February 1982, the Board of Directors of the NLN, which accredits practical, diploma, AD, and baccalaureate nursing education programs, adopted a statement that explicitly supports the retention of all current types of nurse education programs and the current system of state licensure but nevertheless recognizes the goal of baccalaureate preparation for entry into professional practice.[41]

The controversy over the education to be required for entry into professional practice has divided nursing, particularly in its influence at the state level, where legislation to change current nurse practice acts would usually be required to implement a position limiting entry into professional practice. Such legislation has been introduced in some states but not enacted.

Established differentiation of employment and titles among RNs prepared in the three types of programs has not yet occurred but may well evolve in the future. It is unclear at this time whether it would be more likely to occur through changes in laws, through professional certification, through the natural functioning of the marketplace, or through some combination of approaches. Public health and community health agencies have long given preference to baccalaureate nurses, as have the military and veterans hospitals. In site visits to university medical centers and teaching hospitals, the study found many instances in which nursing service directors, recognizing the potential career growth potential of baccalaureate graduates, sought to employ them exclusively or for certain defined levels of responsibility.

This impression was confirmed in a recent report of the Association of Academic Health Centers on the impact of changes in federal policy on academic health centers. The report noted that almost all hospital administrators interviewed in its survey voiced complaints over the amount of orientation time needed for the newly graduated nurses they employ who have come from baccalaureate and AD degree programs. But it also noted that almost all university hospital administrators expressed a preference for baccalaureate, if not master's degree, nurses for the staffing of intensive care and other specialized patients care units, and for nurse supervisory and administrative positions.[42] By means of job counseling and response to promotional opportunities, nursing students and RNs who have graduated from other programs may find that future career progression in large hospitals may be conditional on earning the baccalaureate degree in nursing. Thus, to the extent that baccalaureate graduates increasingly establish their value to hospitals and to other nursing employers, position and salary differentiation can be expected to respond to market forces, as in other occupations.

## Responsibilities of Advanced Level Nurses

A large proportion of RNs occupy important leadership positions in many aspects of nursing service and nursing education. To cite but a few examples, directors of nursing service and their assistants often manage multi-million-dollar nursing service budgets in hospitals. The nursing service staff, on the average, makes up 43 percent of total hospital personnel; it is by far the largest single personnel component. The National Sample Survey of Registered Nurses, November 1980 estimated that hospitals employed 23,100 nurses in top administrative positions and an additional 48,600 in middle management supervisory positions, while nursing homes employed more than 19,700 nursing service administrators and 14,400 nurse supervisors.[43]

The count of nurses who have had advanced training and who practice in one or more clinical specialties is made difficult by the variety of position titles they hold. According to the same National Sample Survey of Registered Nurses, November 1980, about 24,000 such nurses, including 5,700 nurse practitioners, provided specialized clinical support to hospital nursing services. In addition, hospitals employed 11,800 nurse anesthetists. By contrast, the nation's 19,000 nursing homes employed fewer than 1,300 clinical nurse specialists, almost all of whom were consultants.[44]

Of the 83,400 RNs who worked in public and/or community health in 1980, about 15,000 occupied administrative or supervisory positions and about 9,200 were some type of clinical nurse specialist, including almost 4,500 nurse practitioners or midwives.[45]

Another important component of nursing is the nurse educator. Estimates from the same survey reported slightly over 37,000 nurses were instructors in nursing education programs preparing nurses for initial licensing or for graduate degrees.[46] In addition, almost 16,000 nurses in hospitals and 2,000 in nursing homes reported themselves as instructors--presumably in diploma programs, conducting staff development, or continuing education programs, or with adjunct teaching appointments in academic nursing education programs.

## Education for Advanced Level Positions

Advanced preparation is necessary for nurses who will work in nurse education. Yet in 1980 only slightly more than 5 percent of RNs had graduate degrees in nursing. Others, in undetermined numbers, had one or another form of special non-degree training to earn either professional or institutional certification. Certification programs are offered to RNs by the ANA, by nurse specialty associations, and by some academic nursing education programs. Most certifying bodies require that applicants have substantial clinical experince in the area of their specialty within the preceding 3 years. About 10,300 RNs hold certificates in one of the 17 nurse specialty areas for which the ANA offers certification; about 59,000 others hold certificates from one of more than 25 member bodies of the National Federation for Specialty Nursing Organizations (Appendix 4). Many large hospitals also offer institutional certification to successful graduates of their various staff development programs in some special nursing field, such as coronary care or trauma care.

Table 4 shows the highest nursing-related educational preparation

TABLE 4 Distribution of Registered Nurses Among Positions in Nursing Service Management, Nurse Education, and Clinical Specialties by Highest Educational Preparation, November 1980

| Title | Total | Associate Degree | Diploma | Baccalaureate | Masters | Doctorate |
|---|---|---|---|---|---|---|
| Administrator or assistant | 100.0 | 9.7 | 46.7 | 24.0 | 18.2 | 1.4 |
| Consultant | 100.0 | 8.8 | 39.3 | 28.2 | 23.2 | 0.5 |
| Supervisor or assistant | 100.0 | 17.4 | 59.8 | 19.4 | 3.4 | - |
| Instructor (all nurse educators) | 100.0 | 7.0 | 20.1 | 32.2 | 38.2 | 2.5 |
| Nurse practitioner/ midwife | 100.0 | 10.5 | 40.1 | 30.1 | 19.1 | 0.2 |
| Clinical nurse specialist | 100.0 | 15.3 | 36.7 | 20.2 | 27.1 | 0.7 |
| Nurse clinician | 100.0 | 14.0 | 43.9 | 26.8 | 13.0 | 2.3 |
| Nurse anesthetist | 100.0 | 19.5 | 55.5 | 23.4 | 1.6 | - |
| TOTAL | 100.0 | 20.2 | 51.1 | 23.4 | 5.1 | 0.2 |

SOURCE: National Sample Survey of Registered Nurses, November 1980, Table 10, p. 18 (percentages recalculated to eliminate unknowns) (see Reference 1 for complete citation).

of RNs in advanced nursing positions in 1980, not including certification. To the extent that graduate education at the master's or doctoral level is considered important for the management, education, and advanced nurse specialist and consultant positions listed (which 264,258 RNs filled in 1980), there appear to be deficits in the formal educational attainments of many nurses in advanced positions. Except for those in nursing education, the great majority of such positions are filled by RNs whose highest education is a diploma or a 2-year AD degree. Even in the field of nursing education, as will be documented in Chapter V, there is an appreciable deficit.

The relatively low average level of formal educational attainment of nurses in management positions may be explained in part by larger proportions of diploma nurses being employed in small hospitals and in nursing homes. Many nurses in clinical specialist positions probably received their training in certification programs.

Today, however, from testimony the committee has received, and from its analysis of the move toward post-RN programs, it is apparent that increasing numbers of diploma and AD nurses are working toward baccalaureate degrees and that increasing numbers of baccalaureate nurses are seeking graduate education. These trends and their implications for future nursing education funding policy will be discussed in Chapters IV and V. In part, they may be a response to the varied career opportunities open to nurses with master's and doctoral degrees. In part, also, they may be a response to the higher salaries earned by nurses with advanced education.

The study analyzed salary data from the National Sample Survey of Registered Nurses, November 1980, according to the RN respondents' years of experience and their highest educational preparation. As can be seen in Table 5, at most levels of experience there is a small but steady increment in the median salaries from the RNs with diplomas, who rank lowest, to the RNs with graduate degrees, who rank highest. Salary differentiation among the three types of generalist nurse

TABLE 5 Median Annual Salaries for Full-Time Registered Nurses, by Years of Experience and Highest Educational Preparation, November 1980

| Years of Experience | Diploma | Associate Degree | Baccalaureate | Graduate |
|---|---|---|---|---|
| 1-2 | $15,322 | $15,741 | $16,568 | $17,367 |
| 3-5 | 16,440 | 16,714 | 17,178 | 18,653 |
| 6-10 | 16,955 | 17,475 | 18,210 | 20,773 |
| 11-15 | 17,179 | 18,528 | 18,898 | 22,117 |
| 16-20 | 17,490 | 20,870 | 19,569 | 22,997 |
| 21-25 | 17,915 | 18,036 | 19,965 | 22,352 |
| 26+ | 18,040 | 18,393 | 21,100 | 23,851 |

SOURCE: Study analysis of data from National Sample Survey of Registered Nurses, November 1980.

graduates is usually less than $2,000 per year. However, nurses with graduate degrees have annual salaries $2,000-$4,000 higher than nurses with lesser preparation.

## Federal, State, and Private Financing of Nurse Education

The nation's huge annual investment in higher education has traditionally been planned and supported largely by state governments and the private sector. Collectively, state appropriations for higher education totaled approximately $23 billion in fiscal 1982.[47] The federal government's support of post-secondary education has been given in two main directions. First, it has added to and disseminated fundamental knowledge by supporting research and by collecting and disseminating information. Second, since World War II, the federal government has assumed a basic responsibility to make post-secondary and vocational education available to qualified needy students for the general purpose of enriching the nation's overall resources of educated and technically skilled people. In 1982, federal appropriations for financial assistance programs to students, including Pell Grants and campus-based student aid, but not including Social Security and veterans' benefits, totaled $6.9 billion (see Chapter III). In addition to these major roles, federal support has also taken the form of technical assistance and support of innovative programs.

In special circumstances and at special times when critical manpower shortages have arisen, the federal government has stepped in with specific programs to alleviate them. Such assistance has been particularly notable in health and scientific manpower legislation. It is important to view the financing of nurse education, including the Nurse Training Act and its successive amendments, in this general context.

Before World War II, nurse education, with a few exceptions, was largely the responsibility of the private sector. Nurse education took place almost entirely in hospitals, often in an apprentice-type mode where formal and informal instruction of students was exchanged for the students' services in patient care. At the same time, however, schools of nursing in a few universities were establishing the models that education for RNs would follow in the postwar period, when it largely moved out of hospitals and into institutions of higher learning.

Since World War II, nurse education has been increasingly supported by state and local tax dollars as the number of diploma programs (almost entirely private) dwindled and the number of AD programs in community colleges (almost entirely public) soared. Since 1970, the proportion of baccalaureate nursing programs has remained almost evenly divided between private and public colleges and universities.[48,49]

Although the federal government had been tangentially involved in nursing since the 1930s, the Nurse Training Act of 1964 (P.L. 88-581) was the first comprehensive federal legislation to provide funding for nurse education. In response to the 1963 report of the Surgeon General's Consultant Group on Nursing that called for more concerted federal involvement to prevent future nurse shortages, the act consolidated several existing programs and expanded the authorizations.[50] Adding Title VIII to the Public Health Service Act, it authorized (1) grants to assist in the construction of teaching facilities, (2) grants to defray the costs of special projects to strengthen nurse education programs, (3) formula payments to schools of nursing, and (4) extension of professional nurse traineeships. Subsequent enactments in 1966 (P.L. 89-751), 1968 (P.L. 90-490), 1971 (P.L. 92-158), 1975 (P.L. 94-63), and 1981 (P.L. 97-35) reauthorized and revised provisions of the nurse training program. The current authorization expires in 1984.

These successive renewals of the Nurse Training Act reflected continuing congressional efforts to ensure an adequate and properly distributed supply of nursing personnel. In recent years, they have been made in the face of moves by successive administrations of both political parties to reduce or eliminate federal funding on the grounds that the projected supply would be sufficient in its characteristics and distribtution to meet the nation's needs. Successive authorizations and shifts in appropriations have brought about changes in the kinds of programs that have been funded, in the types of students supported, and in annual budgetary allocations. These are presented in Appendix 2 and discussed in other chapters of the report.

In summary, almost $1.6 billion has been appropriated under the Nurse Training Act between 1965 and 1982. Of this sum, approximately 55 percent went for various forms of support to institutions and 43 percent for various forms of support for students. During this same period, under other authorities of the Public Health Services Act, about $72 million was appropriated for nursing research fellowships and grants. For 1982, appropriations under the Nurse Training Act and for nursing research programs were $50.7 million.

The National Institutes of Health have also been a source of funds to support teaching costs and student stipends for nurses pursuing advanced degrees. From 1970 to 1981 inclusive about $105 million was awarded, largely to support master's degree programs and students through the National Institute of Mental Health.

The full extent to which nursing students have been relying on general federal loans and other student aid programs is not known, because federal and institutional records are not kept in ways that permit such analysis. However, in 1981 about three out of five entering college freshmen who expected to enter nursing reported that they expected to receive some form of federal student aid. Finally, although most formal nurse education is no longer located in hospitals, according to an estimate by the Health Care Financing Administration, in 1979, hospitals were reimbursed approximately $350 million for nursing education under the Medicare program.[51] Private sources, including students and their families, and local government funds are other major sources of nurse education financing.

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CHAPTER II

# Meeting Current and Future Needs for Nurses

The Congress asked the Institute of Medicine to consider the present and future need for nurses under existing arrangements for providing health care, and under specified modifications of health care organization and financing that may influence such needs in the future. The committee debated whether to interpret the charge primarily in terms of the current and anticipated market demand for nurses, or whether to base its recommendations on professional perceptions of the supply of nurses needed to fully staff all health care settings at all times. This was not just an exercise in semantics around the word "need"; conclusions that could be reached by employing these different interpretations could be widely divergent. Because both concepts of need were thought to be important, the committee decided to work with both, and to distinguish clearly in each case the concept from which estimates were derived.

The committee has answered the congressional questions in the context of effective economic demand--i.e., on the basis of observed utilization, reflecting present and probable future willingness and ability of hospitals and other health service providers to employ nursing personnel of various types. It assumed that it would be wasteful to society and unfair to individuals to encourage the educational system to produce more graduates than historical evidence indicates would be likely to be employed. However, it is important that policymakers see the potential magnitude and characteristics of the supply that would be required if one were, instead, to adopt professional criteria of nursing "need." This report, thus, also sets out estimates that have been made and published on the basis of judgments by nursing leaders as to what the demand should be to meet staffing standards they believe to be either minimally necessary or desirable to provide nursing services to patients in different settings of care.

In this framework, the chapter presents the committee's observations and conclusions as to the immediate and long-term prospects for a sufficient overall national supply of registered nurses (RNs) and licensed practical nurses (LPNs) to meet the nation's needs for their services. It also deals with planning for meeting nursing needs at the state and local level.

## Current Supply and Demand

During the 1970s there were widespread reports of a shortage of RNs to staff the nation's hospitals and nursing homes. If one defines shortage as an unfavorable balance between supply and demand, the phenomenon was not new; it has been present almost continuously since World War II.

In the popular view, nurse shortages are extensive and stem from low salaries and stressful working conditions that lead nurses to desert nursing for more rewarding work and influence potential nursing students to choose other careers. However, notwithstanding the acute nature of shortages in many localities and studies and testimony to the committee that many RNs are dissatisfied with their professional status and working conditions, the recent shortages have not been caused by a failure of nurses to work in their profession. On the contrary, the number of employed RNs more than doubled during the past two decades, rising from 550,000 in 1962 to an estimated 1,360,000 in 1982. Expressed as a population ratio, the supply increased from 298 per 100,000 population in 1962 to an estimated 572 per 100,000 in 1982.[1,2] Moreover, except for one brief interval, graduations from RN education programs also rose steadily during the 1970s.[3] The dramatic increases in supply were largely in response to labor market interactions, including improved compensation, more flexible hours, and other incentives to nurse employment.

Thus, nurse shortages did not develop from a drop or leveling off of the supply, but rather from dramatic growth in the demand for nursing services in hospitals and nursing homes during the decade of the 1970s--a growth that, until the economic recession in 1982, consistently outstripped the marked growth in supply. Therefore, to address the problem of present and potential future shortages, at both national and state levels, requires that as much attention be paid to the demand side of the equation as to the supply. This, and the particularly local character of nursing shortages, have important implications for the support of nursing education.

### The Supply of Nurses

Registered Nurses Our study estimates that at the end of 1982 there were some 1.36 million RNs in the nation's active nurse supply.* The estimate is based on the most recent national sample survey that found a total of 1.27 million employed RNs in November 1980.[4] These nurses constituted 77 percent of the 1.66 million RNs holding licensure as of the survey date. The study estimates that there were another 200,000 graduates who had not maintained their licenses.[5] This total estimated population in 1980 of 1.86 million graduates from programs preparing for RN licensure is depicted in Figure 4 by age and by type of basic educational preparation. It points up the skewed age distribution of RNs, and the dramatic shift from diploma graduates at older ages to those with associate and baccalaureate degrees at the younger end of the age range.

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*The "supply" of RNs is used to mean those who are employed or in practice. The "population" of RNs used includes all living graduates of United States schools whether or not currently licensed, plus all foreign graduates who have been licensed in the United States.

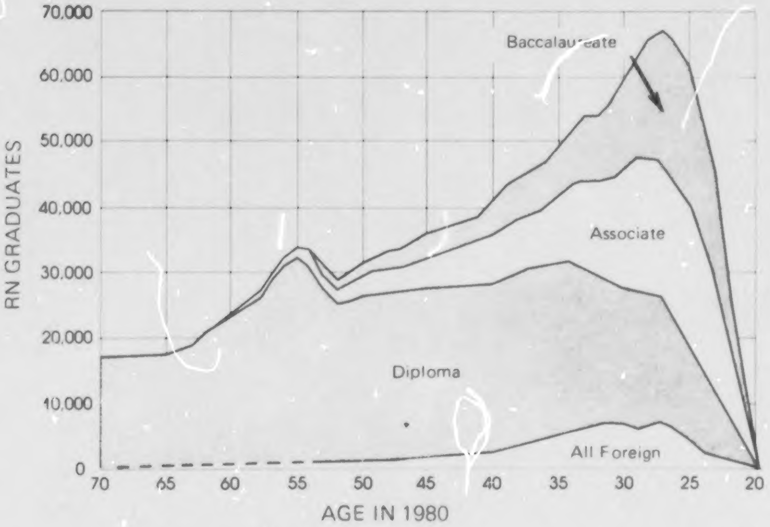

FIGURE 4 The 1980 population of nurses graduated from basic programs preparing for registered nurse licensure, by age.

Between 1970 and the end of 1980 the number of employed RNs rose from 722,000 to 1,273,000.[6] This represented an increase from 356 RNs per 100,000 population in 1970 to 558 at the end of 1980. The increase was supplied both by increased labor force participation of RNs and by a sharp rise in the number of graduates of RN programs. The rate of labor force participation of RNs has been increasing substantially over several decades. To the employer or potential employer of RNs, labor force participation must be looked at in terms of the proportion of currently licensed RNs who are employed. In 1980, this proportion was 76 percent. This is the rate cited throughout this report, unless otherwise indicated. However, in this section, for purposes of historical comparisons and for making supply projections, the base used is the ratio of employed RNs to the total number of living graduates of RN programs.* On this base, the participation rate in 1980 was 68 percent. In 1927, one-third of all graduates (whether or not registered) were employed in nursing. By 1950 the proportion had risen to 40 percent, by 1970 to about 60 percent, and by 1980 to 68 percent. Between 1950 and 1960 the greatest increases were among older nurses; more recently, the greatest increases have been among RNs in the earlier childbearing years.[7] Figure 5 depicts the levels of labor force participation of RNs at these intervals.

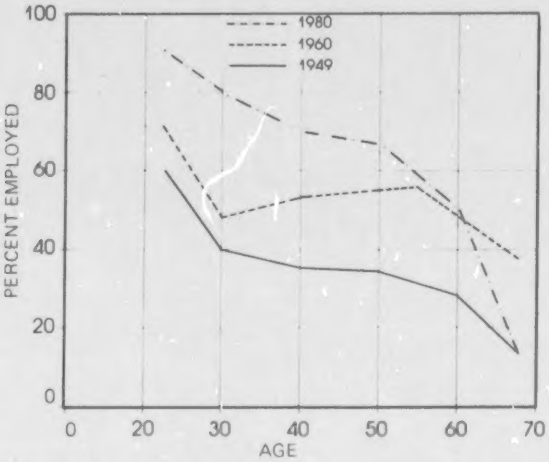

FIGURE 5 Registered nurse labor force participation, by age, 1949, 1960, and 1980; all graduates of programs preparing for registered nurse licensure.

The changing employment pattern of RNs reflects the changing working patterns of women generally. These patterns vary not only over time, but also at any one time by level of educational preparation. Women having higher academic preparation participate in the labor force at a higher rate than do those with less education. Today, the labor force participation of RNs is very much like that of all women with some college education.[8]

New graduates from the three types of basic programs preparing for RN licensure--diploma, associate degree (AD), and baccalaureate--rose from 43,639 in 1970 to 76,415 in 1980--an increase of 75 percent in 10 years. The number of graduations dropped slightly in 1981, to 74,890. Figures on 1980-1981 admissions, on the other hand, indicate an expected further increase in the proportion of AD graduates as well as numerical increases over the previous year admissions for each of the three types of program. As noted in Chaper I, there was a dramatic shift during the past decade from diploma graduates, half of the total in 1970, to AD graduates, who made up almost half of the 1980 graduates (Table 6). The proportion of baccalaureate graduates has grown steadily during this period, from one-fifth the annual total in 1970 to one-third in 1981. Basic RN programs are drawing from a widening age base (Table 7). This change has helped to offset the decline in enrollment which was expected to follow the current decline in the number of young people.

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*This method is discussed in more detail in West, M.D. The projected supply of registered nurses, 1990: Discussion and methodology (see Reference 2 for complete citation).

TABLE 6 Graduations From Basic Registered Nurse Programs, 1970, 1980, and 1981

| | 1970 | | 1980 | | 1981 | |
|---|---|---|---|---|---|---|
| Program type | Number | Percent | Number | Percent | Number | Percent |
| Diploma | 22,856 | 52.4 | 14,495 | 19.0 | 12,903 | 17.2 |
| Associate | 11,678 | 26.7 | 36,509 | 47.8 | 37,183 | 49.7 |
| Baccalaureate | 9,105 | 20.9 | 25,411 | 33.2 | 24,804 | 33.1 |
| TOTAL | 43,639 | 100.0 | 76,415 | 100.0 | 74,890 | 100.0 |

NOTE: "Basic" programs include baccalaureate, AD, and diploma programs preparing students for initial RN licensure. Graduations do not include those of RNs from post-RN programs which grant baccalaureate degrees, nor do they include those from master's and doctoral programs.

SOURCE: NLN nursing data book 1982, Table 36, and earlier years (see Reference 32 for complete citation).

Licensed Practical Nurses The supply of LPNs also has grown substantially. From 370,000 employed LPNs in 1970 the number rose to an estimated 549,000 in 1980. This represents a growth in the ratio of LPNs to population from 183 per 100,000 population in 1970 to an estimated 248 per 100,000 in 1980.[9,10] The most recent survey of state boards of nurse licensure found that approximately 800,000 licenses were held by LPNs in 1981-1982.[11] Adjusted for some duplication (persons licensed in more than one state), the total number probably is close to 700,000.

The estimate of the 1980 active supply cited above was made by the DHHS on the basis of data contained in the 1974 Inventory of Licensed Practical Nurses, which showed 406,000 employed LPNs in 1974. The DHHS estimates that the number of employed LPNs increased by 143,000 between 1974 and 1980, or an average of 24,000 per year.

The annual number of graduates of practical nurse (PN) programs

TABLE 7 Proportions of Graduations From Basic Registered Nurse Programs at Age 25 or Older, by Program Type, Selected Years

| | Year of Graduation | | |
|---|---|---|---|
| Program Type | 1960-1974 | 1975[a] | 1979-1980[b] |
| Diploma | 4.0 | 14.0 | 25.7 |
| Associate | 26.0 | 48.0 | 63.8 |
| Baccalaureate | 7.0 | 14.0 | 27.0 |

[a] SOURCE: Study group analysis of ANA, 1977 national sample survey of registered nurses: A report on the nurse population and factors affecting their supply (see Reference 47 for complete citation).

[b] SOURCE: NLN nursing data book 1981, Table 130, p. 132 (see Reference 3 for complete citation).

increased from 37,128 in 1970 to 48,081 in 1976. Since then it has declined to 41,868 in 1981. The proportion of PN graduates who were prepared in junior or community colleges increased from about 21 percent in 1970 to almost 30 percent in 1981, while PN graduates of technical or vocational schools remained at about a constant level, and those of hospital programs decreased.[12,13] The pool of LPNs is one on which RN programs are drawing to offset the recent drop in high school graduates.

## The Demand for Nurses

Registered Nurses The 1970s witnessed fundamental changes in the way health care was provided to the United States population. Most important in creating increased demand for nursing services was the population's increasing access to health care during that decade, made possible by liberalization of many aspects of health care financing. Per capita, community hospital admissions rose by 10 percent (Table 8). There were other, more specific, spurs to nurse demand. One example is the growth in the life-support monitoring systems of hospital intensive care units (ICUs). In 1971, there were only 3,200 beds in such units; by 1980, the number had increased twentyfold to more than 68,000.[14,15] The effect of this increase in ICU beds on demand for nurses is evidenced by the fact that the recommended staffing of nurses over a 24-hour period in ICUs is one nurse for each patient (or three nurses per patient day, each for an 8-hour shift), compared with a recommended standard of one nurse to six patients in conventional medical-surgical units.[16]

The increasingly complex technology employed in hospitals also can be illustrated by changes in the index of service intensity developed by the American Hospital Association (AHA), a measure that takes into account quantities of 37 types of hospital services per patient day, including laboratory tests, X-rays, prescriptions, visits to the operating room, and the like, weighted by base-year cost. This index rose by more than 55 percent between January 1970 and October 1979.[17] Such increased intensity means more work for nurses, whether in direct care, coordinating services, recordkeeping, or activities such as teaching and supervising. Also during the 1970s, 312,000 beds were closed in nonfederal psychiatric hospitals, a situation placing on community hospitals an increased load of patients with conditions requiring intensive treatment for acute psychiatric illness, alcoholism, and drug abuse and posing a greater need for psychiatric nursing service.[18]

In addition to increased rates of admission to hospitals, shorter patient stays during the 1970s (Table 8) also increased the amount and intensity of work for nurses because the first days of stay necessitate the most nursing service. Further, there was a tremendous growth in ambulatory care provided in hospital outpatient departments and emergency rooms. The number of hospital outpatient visits in short-term general and allied special hospitals increased from approximately 134 million in 1970 to 207 million in 1980, the increase thus creating additional demands for nurses.

TABLE 8 Beds, Inpatient Utilization, and Outpatient Visits in Nonfederal Short-Term General and Allied Special Hospitals, 1970 and 1980

| Measure | 1970 | 1980 | Percent Change |
|---|---|---|---|
| Beds (thousands) | 848 | 992 | +17.0 |
| Admissions (thousands) | 29,252 | 36,198 | +23.7 |
| Admissions per thousand population | 145 | 160 | +10.3 |
| Average length of stay (days) | 8.2 | 7.6 | -7.3 |
| Outpatient visits (thousands) | 133,545 | 206,752 | +54.8 |

SOURCE: AHA. Hospital statistics, 1981, Table 1, p. 4 (see Reference 15 for complete citation).

Implementation and rapid expansion of Medicaid in the 1960s resulted in an explosive growth of nursing homes. Between 1973 and 1978, however, the number of nursing home beds in the United States stabilized while the number of patients continued to rise. Although the approximately 1.3 million patients in nursing homes on any one day now outnumber patients in hospitals, and although most need active nursing care, there is at present a low effective demand for RNs in these settings. This can be attributed to a variety of causes, including minimal private insurance and Medicare coverage, restrictive Medicaid payment systems, and shortages of state funds (Chapter VI).

By contrast, cost-based reimbursement to hospitals by Blue Cross, Medicare, and Medicaid and payment of charges by private insurance allowed community hospitals to adopt more liberal staffing policies in response to the technological developments reviewed above. These hospitals employed almost 63 percent more full-time equivalent (FTE) RNs in 1980 than in 1970.[19,20]

More federal funds for primary care nursing in community health centers, mental health centers, and rural health clinics probably also contributed to increasing demand for RNs in such settings. Although recent figures are not available, the number of RNs employed in public health work and school nursing in state and local agencies increased almost 40 percent between 1972 and 1979.[21] The number of visiting nurses (treated as a subcategory of public health/community health nurses) also increased during the period.[22] In short, the 1970s were a time of tremendous increase in the effective demand for RNs, particularly in hospitals.

Because almost identical national surveys of RNs were conducted in 1977 and in 1980, the extraordinary growth in numbers of employed nurses that occurred during even this short period of time has been charted. A comparison of these two sample surveys of RNs, both using the same group of work settings, shows that the employment of RNs increased in all settings except private duty nursing (Table 9). Eighty percent of the total increase took place in hospitals, where about two-thirds of all RNs are employed today. As the table shows, hospitals employed almost 40 percent more RNs at the end of 1980 than

TABLE 9 Employed Registered Nurses, by Work Setting, 1977 and 1980

| | Number Employed | | 1977-1980 Change | |
|---|---|---|---|---|
| Work Setting | 1977[a] | 1980[b] | Number | Percent |
| Hospital | 601,011 | 835,647 | 234,636 | 39.0 |
| Nursing home | 79,647 | 101,209 | 21,562 | 27.1 |
| Public/community health | 77,139 | 83,440 | 6,301 | 8.2 |
| Physicians/dentists office | 69,263 | 71,974 | 2,711 | 3.9 |
| Student health service | 41,365 | 44,906 | 3,541 | 8.6 |
| Nursing education | 37,826 | 46,504 | 8,678 | 22.9 |
| Occupational health | 24,317 | 29,164 | 4,847 | 19.9 |
| Private duty | 28,563 | 20,240 | -8,323 | -29.1 |
| Other and unknown | 19,102 | 39,768 | 20,666 | 108.2 |
| TOTAL | 978,234 | 1,272,851 | 294,617 | 30.1 |

[a]SOURCE: Roth, A., et al. 1977 national sample survey of registered nurses: A report on the nurse population and factors affecting their supply, Table 51, p. 183 (see Reference 47 for complete citation).

[b]SOURCE: DHHS, HRA. The registered nurse population, an overview. From national sample survey of registered nurses, November, 1980, Table 5, p. 13 (see Reference 4 for complete citation).

TABLE 10 Registered Nurses and Licensed Practical Nurses (FTE) in Hospitals, 1972 and 1980

| Nurses (FTE)[a] | Type of Hospital | Year<br>1972 | <br>1980 | Percent Change |
|---|---|---|---|---|
| Registered nurse and licensed practical nurse | All hospitals | 641,400 | 951,800 | 48.4 |
| Registered nurse | All hospitals | 425,700 | 693,400 | +62.9 |
| | Community[b] | 369,700 | 623,100 | +68.5 |
| | Psychiatric | 21,100 | 25,400 | +20.4 |
| | Other | 34,900 | 44,900 | +28.7 |
| Licensed practical nurse | All hospitals | 215,700 | 258,400 | +19.8 |
| | Community [a] | 184,300 | 228,500 | +24.0 |
| | Psychiatric | 17,000 | 14,200 | -16.5 |
| | Other | 14,400 | 15,700 | + 9.0 |

[a] The number of full-time equivalent nurses (FTE) is calculated by adding half of the number of nurses employed part time to the number of those employed full time.

[b] Nonfederal short-term general and allied special hospitals.

SOURCES: AHA. Hospital statistics, 1972, Table 3, p. 27 (see Reference 14 for complete citation); Hospital statistics, 1981, Table 3, p. 13 (see Reference 15 for complete citation).

they had 3 years previously, and the numbers in nursing homes, nursing education, and occupational health also rose substantially.*

This growth rate in demand appears to have slackened somewhat by 1982. Although no national data are yet available, the committee has received reports from many states that indicate lessened desire and ability of hospitals to add to their overall nursing staff positions. States hit hardest by the 1982 economic recession appeared to have the most reduction in demand for nurses, partly because of a drop in hospital utilization as health insurance benefits ran out for the unemployed.

Licensed Practical Nurses The great majority of practicing LPNs also work in hospitals. There was a slow but steady rise in the demand for LPNs on hospital staffs between 1972 and 1980, with the number in all hospitals increasing by 20 percent, and in community hospitals by 24 percent. The number of LPNs in psychiatric hospitals dropped by 17 percent, but the number of RNs increased by 20 percent, as is shown in Table 10. The increase in LPN staffing, however, has been proportionately less than the increase in RN staffing, so that

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*For further detail, see background paper, Levine, E. The registered nurse supply and nurse shortage (see Reference 48 for complete citation).

LPNs made up 33.6 percent of the nurse staffing in hospitals in 1972, but the proportion dropped to 27.1 percent in 1980.

## Extent and Nature of Supply-Demand Imbalances

The dimensions of the nursing shortage during the 1970s have been only partially defined and documented. Available measures include the extent of RN and LPN unemployment and vacancy rates.

The Bureau of Labor Statistics reports a consistently low rate of unemployment for nurses. During the period 1971-1981, the median annual rate for RNs was 1.9 percent and for LPNs 3.5 percent. Both were well below the 6 percent median rate for all United States civilian workers during that period. But the median unemployment rate for ancillary nursing personnel--aides and orderlies--was 7.5 percent.[23]

The AHA's 1980 annual survey reported approximately 62,000 unfilled positions for RNs and approximately 18,000 for LPNs.* This translated to vacancy rates of 10 percent of all budgeted positions for staff RNs and 7 percent for LPNs.[24] At the same time, 28 percent of hospitals had no staff RN vacancies, and 53 percent had no LPN vacancies.[25] The AHA survey showed considerable variation in vacancy rates among the states. Vacancies for RN staff nurses ranged from a high of 15 percent in Louisiana to a low of 5 percent in Vermont. The corresponding range for LPNs was from 11 percent in Delaware to a low of 2 percent in Idaho.[26] Vacancy rates also varied greatly according to hospital type. General hospitals reported average vacancy rates of 9 percent for RN staff nurses and 6 percent for LPNs, but the corresponding rates in chronic disease hospitals were 30 and 26 percent, respectively.[27]

There is no comparable survey to provide current vacancy rates for nursing homes. However, in testimony before the Select Committee on Aging of the House of Representatives in 1980, the executive vice president of the National Council of Health Centers cited a recent national survey that reports a national shortage of 53 percent.[28]

In 1981, the AHA conducted a nursing personnel survey of a 20-percent sample of United States hospitals. It found that vacancies occurred very unevenly within the same institution, according to type of nursing unit and work shifts. For example, intensive care units experienced high vacancy rates.[29] Several state studies of nursing report that a large proportion of all vacancies occurred on night and evening shifts. For example, among hospitals in New Jersey, more than 50 percent of the vacancies occurred on the night and evening shifts.

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*Numbers of vacant budgeted positions do not necessarily give a true picture of actual staffing deficiencies. Vacancies can occur because of job turnover, which, although a problem in itself (Chapter VII), does not necessarily indicate an insufficient supply. Also, the number of positions budgeted may or may not reflect employers' actual willingness to hire.

Studies in Rhode Island showed that 80 percent of hospital vacancies occurred on these shifts and also found that patterns of vacancies in nursing homes were similar.[30]

In summary, for purposes of planning specific actions to redress imbalances between the supply of nurses available and the demands of the population for direct nursing care, indicators of national shortages have only limited usefulness. Nursing shortages appear to be phenomena of local markets, within which there is great variability both among institutions and within such institutions. Thus, as will be discussed in Chapter VII, decisions that influence the attractiveness of nursing employment, as well as the more efficient use of nurses already employed, are ones that need to be made locally by individual institutions that employ nurses.

## The Distribution of Nurses

The ratio of RNs to population is rising in all parts of the country (Figure 6), but wide differences among the regions and states still exist. On a regional basis, the ratio of RNs to population is highest in New England and lowest in the south central states. In contrast, the ratio of LPNs to population is highest in the south, particularly in the west south central states, and lowest in the west.

Among individual states the ranges are very wide (Figure 7). In 1977 there were six states and the District of Columbia in which the supply of RNs and LPNs, taken together, provided more than 700 FTE

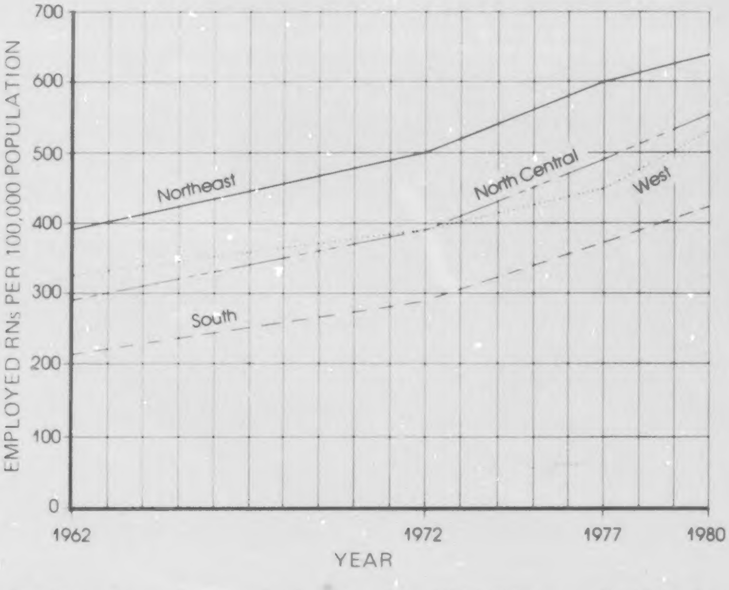

FIGURE 6 Employed registered nurses per 100,000 population by regions of the United States, 1962, 1972, 1977, and estimated 1980.

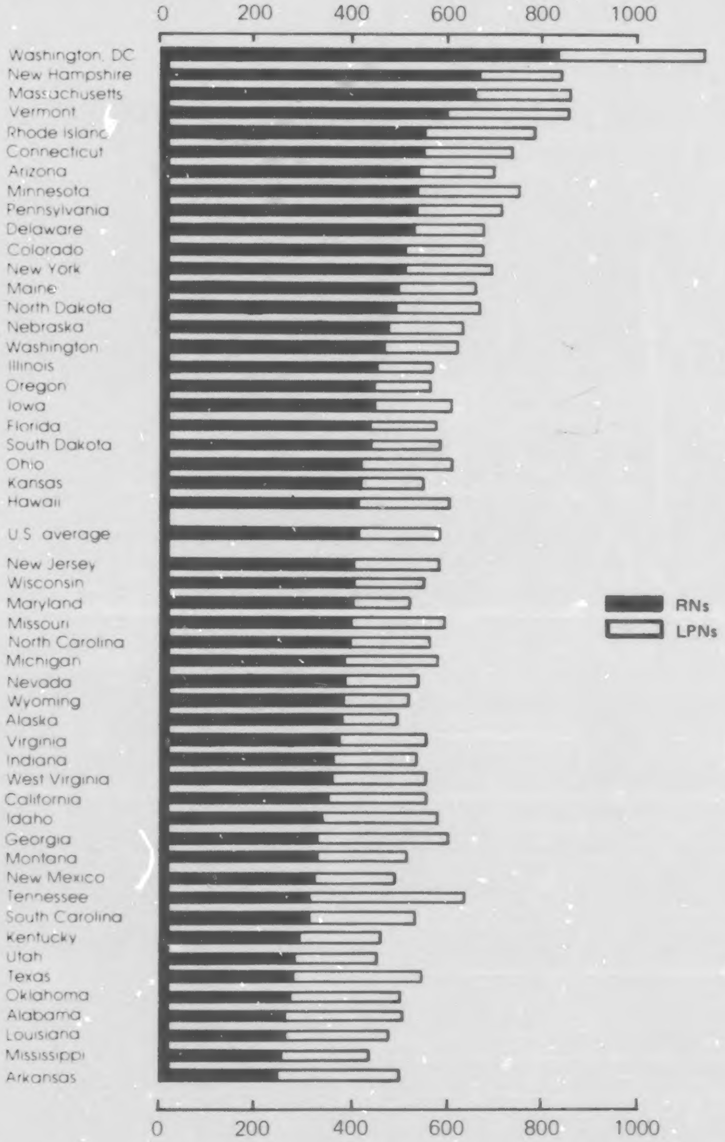

FIGURE 7 Employed registered nurses and licensed practical nurses (FTE) per 100,000 population, by state, 1977.

nurses per 100,000 population. At the other extreme, there were four states in which the ratio was less than 500 per 100,000. If distribution within individual states is taken into account, the ranges are even wider.

## Future Supply and Demand

There is a considerable history of successive undertakings sponsored by the DHHS to estimate future supply and future needs for nurses with projection models that use baseline data available from periodic sample surveys and inventories of educational and employment settings, together with trend data on employment in hospitals, nursing homes, and other settings. Any such projections can, at best, be considered not as firm forecasts but as tools with which to examine the possible effects of alternative assumptions about policies and practices. These forecasts are updated periodically as newer baseline data become available. The Third Report to Congress submitted by the Secretary of Health and Human Services on February 17, 1982, presented the latest departmental supply and demand projections.[31] They were made to the year 2000, based principally on data from the 1977 National Sample Survey of Registered Nurses.

Congress asked the Institute of Medicine to consider the future supply of nurses and the future need for nurses under the present health care delivery system, as well as under some alternative possibilities. These include increased use of ambulatory care facilities and the enactment of legislation for national health insurance. Because market demand and perceptions of need for RNs and LPNs alike are highly localized and tend to become lost or homogenized in national level projections, modeling at the national level can provide only very general guidance for basic nurse manpower planning. We present our estimates with considerable caution and offer them as illustrations of likely future trends under certain stated assumptions. These estimates depict only the mathematical results derived after making adjustments in certain observed trends, on the basis of assumptions about changes in factors relevant to nursing. The estimates are for the year 1990; the committee took the position that the many uncertainties in the shape of the future health care systems would invalidate projections for a longer term.

In formulating its estimates of future demand and supply, the committee has drawn on the valuable work done by DHHS in developing nurse manpower projection methodologies. It has also been able to make use of data from the National Sample Survey of Registered Nurses, November 1980, which became available in July 1982, and various other materials that were not available to the DHHS analysts who prepared the department's Third Report to Congress. This has made it possible for purpose of this study to develop updated national estimates of both the future supply and the demand for RNs. For LPNs, however, no significant new data are available; the study simply presents the estimates of LPN supply contained in the Third Report to Congress, which were based on 1974 survey material.

The Future Supply of Nurses

DHHS Projections for RNs The recent DHHS projections of nurse supply, because they reflected expected net increase in supply from 1977 in what subsequently proved to be an especially dynamic growth period, underestimated the actual 1980 supply, particularly as to the extent to which nurses increase their labor force participation. Nonetheless, for the most part, over time the DHHS supply projections have earned a deserved reputation for utility. Appendix 5 compares the DHHS Third Report projections for 1990 with those contained in this paper.

Study Projections for RNs The supply of active* RNs at the end of 1990 will be determined by the number in the profession, the number of new entrants into the profession (including foreign graduates, a significant element in a few states), and labor force participation rates. Decrements from deaths are taken into account. The number of new entrants will be affected by the availability of educational opportunity (both as to location, capacity, and enrollment policy of schools), the costs of education, the level of public and private support given to the financing of nursing education, the relative attractiveness of nursing as a career in terms of job satisfaction and economic incentives, and immigration laws and regulations that influence inflows of foreign graduates. Labor force participation is influenced by general conditions in the nation's economy, compensation rates, and a host of other factors (Chapter VII).

The study developed three alternative projections of this supply--low, intermediate, and high--using the 1980 data that reveal the sharp increase in labor force participation that took place between 1977 and 1980:+

- The intermediate projection (normative) assumes that the labor force participation of RNs will continue the rise of recent years, although at a somewhat slower rate. It assumes also that financial resources for nursing education will not diminish appreciably and that new entrants to nursing schools will continue to come from a wide age distribution. In view of the declining numbers of young people, however, which reflect the low birth rates of the early 1960s, it is assumed that the total number of graduates from the basic programs preparing for RN licensure will drop from 74,900 in 1981 to 70,000 in 1990.* Under the assumptions of this projection, the number of active RNs would rise from some 1,273,000 at the end of 1980 to 1,710,000 by the end of 1990.

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*Active is defined here as the number who would be employed if it is assumed that conditions of opportunity, work, financing, etc. are comparable to those in 1980.

+Methodology for the study's supply projections is described in detail in West, M. D. Projected supply of registered nurses, 1990: Discussion and methodology (see Reference 2 for complete citation).

- The *low projection* assumes that the rate of labor force participation will not rise above the 1980 level and that the number of graduates will drop to 10 percent below that of the intermediate level, so that the number of graduates will slide to 63,000 in 1990. Such effects might result from continued economic recession reflected in reduced ability to pay for nurse education. Under this projection, there would be 1,643,000 active RNs by the end of 1990.
- The *high projection* assumes that the increasing number of older women entering basic RN programs will push the number graduating to 76,900 in 1990, and labor force participation will rise at the same rate as in the intermediate projection. Under the high projection there would be 1,728,000 active RNs at the end of 1990.

For the purposes of comparing alternative projections of supply, these three projections are shown in Figure 8 as trend lines for FTE and in Table 11, both as totals and as FTE RNs. As can be seen, the

TABLE 11 Supply of Active Registered Nurses, Total and FTE, 1980, and Study Projections for 1982 and 1990

| | Registered Nurses | |
|---|---|---|
| Date | Employed | FTEs |
| November 1980 | 1,272,900 | 1,057,300 |
| December 31, 1982 | 1,360,000 | 1,130,000 |
| December 31, 1990 | | |
| High | 1,728,000 | 1,451,000 |
| Intermediate | 1,710,000 | 1,436,000 |
| Low | 1,643,000 | 1,379,000 |

SOURCE: See Appendix 5.

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*The intermediate projection assumes that annual graduates of baccalaureate and associate degree programs will hold at close to their present levels, with a continuation of the long-term downward trend in hospital diploma graduates as those programs move to join with educational institutions for the joint use of educational and clinical facilities, and to make transitions to degree-granting programs. In 1990, under these assumptions, graduates of basic programs would total 70,000, including 37,600 with associate degrees, 8,500 with diplomas, and 23,900 with baccalaureate degrees. Reports on the number of fall 1981 admissions to these programs indicate that diploma and bacclaureate admissions are holding close to the average of the years 1978-1980, while admissions to associate degree programs are up by 5 percent above that average.[32]

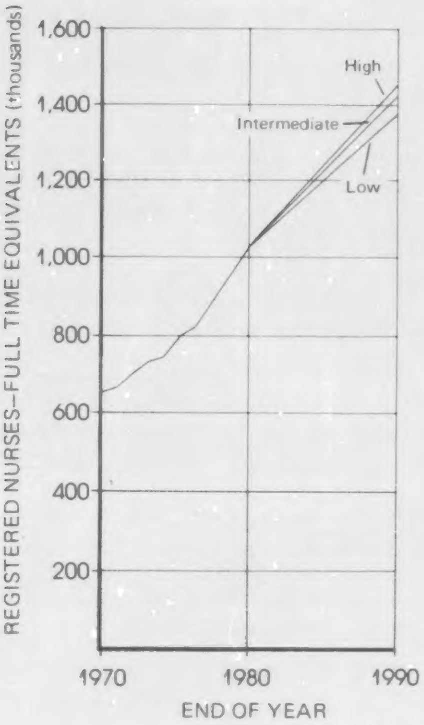

FIGURE 8 Supply of active registered nurses (FTE), 1970-1980, with study projections to 1990.

study projects a continued steep rise in the nation's RN supply to 1990, even under its most conservative projection. The prospect is that all parts of the nation will share in the increase in nurse supply but that marked state and regional differences will persist.

The validity of these projections will depend primarily on the accuracy of the assumptions as to future graduation levels of the educational programs that prepare RNs. The study projections are made at a time of economic recession, and at a time in which both the government and the private sector are increasingly concerned with overall costs and methods of payment for health services as well as with the rising costs of education. The effects of future changes in demand, expressed in willingness to employ nurses and adjustments in their salary levels, might well be translated into unforeseen changes in output. A recent DHHS report on the phenomenon of recurrent shortages of RNs describes the lag between changes in compensation rates and the rates of entrants to nursing and postulates that changes in nurse graduations cause cycles of boom and bust.[33] The relatively short length of nurse education programs, however, allows a more rapid response to increased or decreased demands in local labor markets than is possible in most of the other health professions.

Licensed Practical Nurses In view of the paucity of current data, it is hazardous to make new projections of the future supply of LPNs. DHHS has projected that the rate of graduation of LPNs will continue to decline, reaching a level of 30,000 to 35,000 by 1990.[34] This output, however, will still more than offset expected losses by retirement and death, so that the 1990 supply of active LPNs is projected by DHHS to be between 661,000 and 667,000, or some 100,000 larger than its estimates of the 1980 supply.[35] In relation to population, the change would be from an estimated 249 per 100,000 in 1980 to 274 LPNs per 100,000 in 1990, representing an increase of 10 percent on a per capita basis.

## The Future Demands for Nurses

DHHS Projections for RNs A variety of approaches have been developed to estimate the overall future demand or need for RNs. An extensive review of these was presented in the 1977 Second Report to Congress from DHHS.[36] Some of these approaches are discussed in Appendix 5, and further detail is given in a background paper of this report.* DHHS has also published several analyses of results and methodologies of its various projections.[37,38,39]

In the 1982 Third Report to Congress, DHHS focused on two refinements of earlier approaches--a projection model based on historical trends in effective demand for RNs, and a model based on criteria that represented professional judgments of staffing needs. Because the former was originally developed by Vector Research, Inc., it is sometimes referred to as the "Vector model," but hereinafter we shall refer to it as "the historical trend-based demand model." The second model, based on criteria established by the Western Interstate Commission on Higher Education, is generally called the "WICHE model." We shall refer to it as the "judgment-of-need model."

The historical trend-based demand model assumes that future demands for services rest on the base of actual experience and, thus, will strongly reflect past patterns of utilization and past trends in the delivery of health care. Some of the projection components of this model are based on trends in the provision of services and the utilization of RNs per unit of service in specific kinds of work settings--hospitals, nursing homes, etc. Others are based on trends of employed nurses per unit of population. No distinction is made in this model as to the type of RN educational preparation. Its projections extend to the year 2000.

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*For detail, see Bauder, J. Methodologies for projecting the nation's future nurse requirements (see Reference 49 for complete citation).

The judgment-of-need model is based on assumptions made by panels of RNs and others concerned with the numbers and kinds of nursing service personnel needed to achieve desired health care goals. It incorporates professional judgments regarding desirable changes in the future delivery of health care services as well as in numbers and educational preparation of the nurses (both RN and LPN) required to provide such services. This method--developed for state and national estimating purposes--calls for panels of experts to use judgment to develop criteria for staffing ratios by educational level and in a wider variety of specific work settings than does the historical trend-based model. Two sets of criteria are used: "lower bound" criteria to be met by the target year of the state planning effort, and "upper bound" criteria to be met progressively. The national WICHE projections go to 1990.

The 1982 Third Report to Congress presents the latest DHHS projections of nursing requirements under both approaches. The historical trend-based demand model used the 1977 sample survey of RNs as a base and projected increases in utilization of nurses based on observed trends between 1972 and 1977, with some adjustments based on analytical considerations. The judgment-of-need model reflected modified WICHE assumptions and criteria, updated in November 1980. The DHHS historical trend-based demand model projected a need for 1,245,400 FTE RNs in 1990. In contrast, the judgment-of-need model projected a lower bound need of 1,784,000 FTE RNs in 1990--43 percent more than the historical trend-based demand approach. The comparison in Table 12 shows the magnitude and the difference in estimates obtained from the two approaches according to work setting.* The large differences between the two projections arise from the WICHE panel's judgments as to the need for a far greater number of RNs in nursing homes and in community health services. The former setting accounts for about 377,000 and the latter for about 139,000 of the differences. The judgment-of-need level of staffing in these two settings could be met only through dramatic increases in the supply of RNs, with a major transfer of functions from LPNs to RNs. For all settings combined, the estimated 1990 need for LPNs is 331,000--a level markedly below both the present and projected supply estimates. The projections of the two models for numbers of nurses employed in hospitals are comparatively close, as are those for physicians' offices; the judgment-of-need reduced projections for nursing education appear primarily to be caused by technical peculiarities of the two projection processes.

The judgment-of-need model, unlike the historical trend-based demand model, also projected the number of RNs needed according to levels of educational preparation. Those results are summarized and their implications discussed later in this chapter.

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*The upper bound criteria produced a requirement of 2,440,200 FTE RNs for 1990, but this extreme estimate is not considered in our study report or in the supporting background papers.

TABLE 12 Department of Health and Human Services Projections of Requirements for Registered Nurses (FTE), Two Models, January 1990

| Work Setting | Historical Trend-Based Demand Model (Vector) | Judgment-of-Need Model (WICHE), Lower Bound | Difference |
|---|---|---|---|
| TOTAL--RN | 1,245,400 | 1,784,400 | 539,000 |
| Hospital | 899,920 | 935,700 | 35,780 |
| Nursing home | 93,330 | 469,900 | 376,570 |
| Community health | 101,100 | 240,500 | 139,400 |
| Physicians' office | 71,890 | 66,700 | -5,190 |
| Nursing education | 47,100 | 37,000 | -10,100 |
| Other | 32,020 | 33,700 | 1,680 |
| TOTAL--LPN | Not projected | 331,000 | - |
| Hospital | - | 100,800 | - |
| Nursing home | - | 208,000 | - |
| Community health | - | 2,000 | - |
| Physicians' office | - | 20,000 | - |

SOURCE: Secretary, DHHS. Third report to the Congress, February 17, 1982: Nurse Training Act of 1975, 1982, pp. 174 and 176 (see Reference 10 for complete citation).

Study Projections for RNs The committee reviewed the approaches, assumptions, and problems involved in using the historical trend-based demand model compared with the judgment-of-need model. We recognized the value of both approaches. However, we found the historical trend-based demand approach more consistent with our view that future economic demands for nurses are strongly indicated by experienced trends in actual utilization. Also, this model enabled the committee to make estimates of national demand under alternative assumptions as to future patterns of health service financing and delivery. Accordingly, the committee requested the DHHS to produce certain projections, using this model.*

The availability in mid-1982 of data from the November 1980 National Sample Survey of Registered Nurses made it possible for the committee to update certain base information in the DHHS historical trend-based demand model so as to reflect recent changes in RN staffing. However, we still faced limitations of existing data, including the lack of new 1980 U.S. Census population projections. Other limitations were encountered in timing, resources, and model design. More important, changes in the nation's economic situation during the 1980s, whatever they may turn out to be, may further influence in unanticipated ways both the supply of and the demand for nurses. The estimates presented below, therefore, do not prognosticate; they serve only to illustrate by general orders of magnitude changes that might occur in the use of nurse manpower during this decade.

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*The committee is grateful for the assistance of DHHS staff in determining the feasibility of making several adjustments in the model and for producing new calculations for the three alternative estimates discussed below. In providing these services, however, the DHHS staff assumed no responsibility for the assumptions and specifications that the study committee developed.

Responding to the specific provisions of the congressional charge for this study, the committee considered the potential effects of the enactment of a national health insurance program (Illustration 1) and of increased use of ambulatory care facilities (Illustration 3). In addition, we felt it would be useful to test the potential impact on RN demand of a hypothesis that present patterns of service will continue, but under assumptions of stringent cost containment (Illustration 2). In our illustrations, however, the committee did not venture assumptions as to the effects of possible restructuring of RN roles in the health services delivery system. We assume that restructuring of many types of positions in a variety of settings will occur, but we believe that in view of the evolutionary nature of this process and the lack of national consensus on staffing mix (by educational preparation), the potential restructuring phenomenon does not lend itself to national projection at this time.

The assumptions used in the study's illustrative estimates are outlined below, and the operation of the model is discussed in Appendix 5 in some detail.

### Illustration 1: Estimated Demand for RNs in 1990 Under National Health Insurance

The congressional charge asked that need for nurses be considered under the health care delivery system "as it may be changed by the enactment of legislation for national health insurance." The study's considerations included the facts that (1) there is no consensus as to a version of national health insurance legislation that might be enacted, (2) current public consideration of Medicaid issues does not permit solid assumptions as to ultimate coverage and services under Medicaid, or as to its absorption into a national health insurance program, and (3) the level of resources and breadth of coverage for newly covered (now uninsured) populations in a national plan cannot be predicted. Nor is it clear what changes might occur in the details of the Medicare program. Moreover, assumptions would have to have been made as to date of enactment, phasing, and the question of whether a general overlay of catastrophic insurance for the entire population would be included.

Faced with these many uncertainties, the committee simply adopted a set of high health service utilization requirements to illustrate the demand that might be experienced in the initial years of national health insurance. This estimate also can serve to illustrate what demand might be during the balance of this decade in the absence of national health insurance, if one were to assume that cost containment programs will not be very effective in reducing hospitalization and resulting manpower requirements before the end of the decade. Essentially this estimate assumes a continuation of the demand trends of the past decade; however, a higher base for community health nurse projections was employed. Under these assumptions the demand for FTE RNs would rise to 1.47 million by the end of 1990.

Illustration 2: Estimated Demand for RNs in 1990 Under Cost Containment Measures

An intermediate or normative estimate (not specifically called for by the congressional charge but offered by the committee to illustrate a likely set of assumptions) depicts the possible effect on demand for RNs if stringent cost containment policies at federal and state levels were to become progressively effective over the balance of the decade. The assumptions are that governmental budget imbalances and continuing increases in hospital costs, as well as the continuation of an appreciable rate of inflation in overall health care costs, will cause Medicare and Medicaid (federal and state) to exert increasing pressures on inpatient utilization by means of the capping of appropriated funds. Further limitations on payment are envisioned, such as movement toward prospective rate setting and per capita payment arrangements for groups of sponsored "public patients." Some extension of these trends is also assumed for the private sector. Under these assumptions the demand for FTE RNs would rise to 1.35 million by the end of 1990.

Illustration 3: Estimated Demand for RNs in 1990 Under Increased Use of Ambulatory Care Facilities

The other major alternative the committee was asked to consider was a health system modified by increased use of ambulatory care facilities. For purposes of this estimate, we assumed a substantial expansion of health maintenance organizations (HMOs) by the end of the 1980s, accompanied by an increasingly competitive climate among groups of physicians and providers. We also assumed a cost containment climate in which public and private payors increasingly will question the inappropriate use of intensive care units and of inpatient services when outpatient surgery or ambulatory care could be appropriate.

For the technicalities of modeling, a surrogate assumption was made that, by the end of 1990, 30 percent of the United States population will receive services from HMOs or from some other pattern of service provision that similarly promotes ambulatory care. For this population, the model assumed sharp reductions in the volume of inpatient hospital services characteristic of membership in traditional HMOs (prepaid group practice plans). In addition to an adjustment in the model to reflect a higher base for community health nurse employment projections, the independent assumption was made that

TABLE 13 Study's Illustrations of Projected Demand for Registered Nurses, Total and FTE, 1990, Under Three Sets of Assumptions

| Date and Projections | Registered Nurses Total | Registered Nurses FTE |
|---|---|---|
| November 1980 (actual supply of employed RNs) | 1,272,900 | 1,057,300 |
| December 1990 (projected demand) | | |
| Illustration 1--National health insurance | 1,773,000 | 1,472,000 |
| Illustration 2--Hospital cost containment | 1,623,000 | 1,348,000 |
| Illustration 3--Increased ambulatory care | 1,563,000 | 1,298,000 |

SOURCE: Appendix 5, Table 18.

there would be a doubling in the per capita rate for home care visits for the entire population. Under these assumptions, the demand for FTE RNs would rise to 1.3 million by the end of 1990.

When these three sets of assumptions were applied to the November 1980 estimate of employed RNs--which represented the effective demand at that time--a demand was projected at the end of 1990 that ranges between 1.30 million and 1.47 million full-time equivalent RNs (Table 13). The slope of the resulting trend lines is portrayed in Figure 9. It is assumed that in 1990, as in 1980, nurses working part

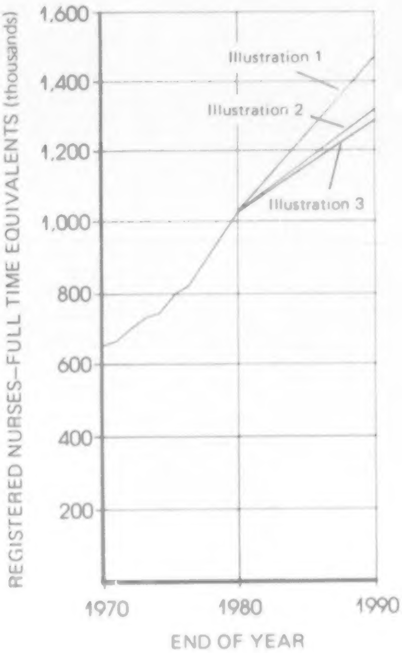

FIGURE 9 Demand for registered nurses (FTE) 1970-1980 (actual) with three illustrative study projections to 1990.

time will make up almost a third of the RN labor force. If this proved to be the case, the demand expressed as numbers of individual active RNs would range between 1.56 million and 1.77 million.

There are no linear relationships in these estimates between changes in patient utilization of different services and nurse employment, because different service settings have varying rates of RN utilization per service and because of other reasons inherent in the model's construction. The study's projections of FTE RN demand are shown by selected work settings in Table 14. Almost all the

TABLE 14 Study's Illustrations of Projected Demand for Registered Nurses (FTE) in Selected Practice Settings, December 1990, Under Three Sets of Assumptions

| Practice Settings | Illustration I | Illustration II | Illustration III |
|---|---|---|---|
| Hospital (total) | 1,024,000 | 906,000 | 844,000 |
| Short-term hospital inpatient | 799,700 | 688,100 | 653,000 |
| ICU | (212,700) | (169,500) | (169,500) |
| Non-ICU inpatient | (569,800) | (501,300) | (466,600) |
| Nursing administration | (17,200) | (17,200) | (17,200) |
| Outpatient | 111,400 | 104,400 | 77,900 |
| Other hospital | 113,000 | 113,000 | 113,000 |
| Nursing home | 100,000 | 100,000 | 100,000 |
| Community health | 123,000 | 123,000 | 123,000 |
| Home care | 30,000 | 30,000 | 62,000 |
| Physicians' office | 64,000 | 64,000 | 22,000[a] |
| HMO-type organizations | 10,000 | 10,000 | 32,000 |
| Nursing education | 57,000 | 52,000 | 50,000 |
| Private duty and other | 63,000 | 63,000 | 63,000 |
| TOTAL | 1,472,000 | 1,348,000 | 1,298,000 |

NOTE: Detail may not add to totals because of rounding.

[a] The sharp drop in nurse requirements in physicians' offices under Illustration III can be discounted; it appears to be only partially attributable to a shift in patient utilization due to increased HMO services. It may also be due, in part, to the fact that the existing model was not designed to accommodate such large increases in assumed HMO enrollments which cause correspondingly large decreases in non-HMO physicians' offices. The resulting nurse requirements for this practice site may reflect the manner in which model components interact.

SOURCE: Appendix 5, Table 18.

differences among the three illustrations are accounted for by their varying assumptions as to future trends in hospital ICU and non-ICU inpatient services and by the added assumed impact on both hospital inpatient and outpatient demand of high HMO enrollment in Illustration III.

Licensed Practical Nurses There is little current information on which to base projections of the future supply of and demand for LPNs. The 1990 supply of employed LPNs was projected by DHHS at 662,000 to 667,000.[40] The study's illustrations of RN demand presented above generally make no assumptions as to future demand for LPNs but also carry no implications as to diminishing need.

## Comparison of the Study's Projections for Supply of and Demand for Registered Nurses

In the future the demand for RNs can be expected to continue to increase with technological advances in health care delivery, population growth, and aging at rates that will depend somewhat on the organization and financing of health care delivery. At the same time, the supply also can be expected to increase, assuming continued financial support for nurse education to assure the reasonably steady rates of graduation described earlier and depending on a continuing high rate of labor force participation.

The three supply projections for RNs made by the committee for the end of 1990 all fall within the wider range of estimates for 1990 demand (Table 15 and Figure 10). This suggests, as far as can be estimated today, that in terms of national RN supply and demand, a reasonable degree of equilibrium will continue. However, because the assumptions for high supply and high demand estimates on the one hand and for low supply and low demand on the other operate on totally different sets of variables, no conclusion should be drawn that a probable concurrence of all low or all high factors in both supply and demand can be assured. The juxtaposition of the two low trend lines, thus, is not to suggest a probable oversupply of nurses; it simply shows order-of-magnitude relationships.

TABLE 15 Summary of the Study's Alternative Projections of the Supply of and Demand for Registered Nurses (FTE), December 1990

| Projection | Demand | Supply |
|---|---|---|
| High | 1,451,000 | 1,472,000 |
| Middle | 1,436,000 | 1,348,000 |
| Low | 1,379,000 | 1,298,000 |

SOURCE: Summary of Tables 11 and 13.

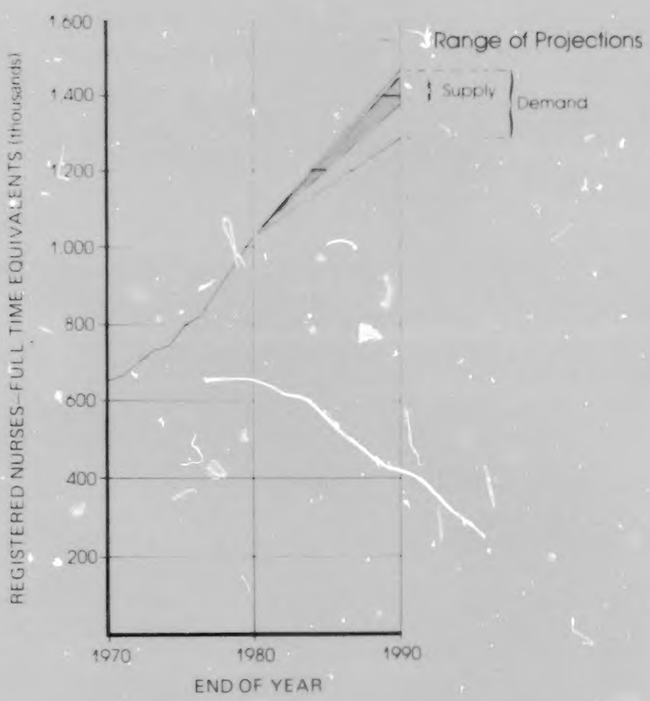

FIGURE 10 Comparison of the projected supply of and demand for registered nurses (FTE), 1980-1990, under alternative study assumptions.

## The Need for Continued Monitoring

The committee recognizes that however reasonable the foregoing estimates may be in the light of 1982 conditions, new circumstances could render them inappropriate to both national and state needs in 1990 or even earlier. Unforeseeable changes certainly will occur in the responsibilities and activities of nurses, in the economy, in the spending priorities that legislators, educators, and individuals establish, in alternative career opportunities available for women, and in the ability of the health care system to prevent, to arrest, or to cure disease and disability. Some of the forces that could operate to influence the extent, nature, and distribution of the future RN and LPN supply, either positively or negatively, are discussed in detail in succeeding chapters of this report.

Given the likelihood of change, nurse education planning, like any other education planning, should rely on a continuing monitoring of the needs of the population as well as conditions in the profession and in health services so as to guide appropriate allocation of nurse education resources. Much of this monitoring should be conducted at the state level. It should encompass the predicted market demand for nurses in various settings of care by geographic regions and subregions, the predicted numbers and distribution of educational output as well as of total future supply, and consideration of unmet needs of special populations.

## Conclusion

As this report is being written, in the midst of a prolonged economic recession, the extent to which hospitals, nursing homes, and other major nurse employers will choose to adjust the numbers and mix of their RN staffs is uncertain. In many geographical areas, past shortages in clinical settings now seem to have been greatly reduced. Improvements in the general economy could reverse some of these situations. However, as of the fall of 1982, on the basis of all evidence we have been able to marshall, the committee concludes that there is no national aggregate shortage of generalist RNs or of LPNs. Rather, we have identified shortages that occur unevenly throughout the nation in different geographic areas, in different health care settings and institutions, within institutions, and in specialty nursing. These and other kinds of shortages are explored at length in succeeding chapters of the report. Their resolution will depend both on the operation of market forces and on concerted actions to be taken by all parties--federal, state and private sector--to facilitate the operation of these forces.

After reviewing alternative sets of factors that might influence supply and demand by 1990, the committee concludes that, although hospitals and others are likely to want to employ greater numbers of RNs and LPNs throughout the decade, additions to the aggregate supply of generalist nurses are likely to keep pace. No exact equilibrium can be assured. Nevertheless, no critical imbalance in basic nurse supply seems imminent. Continued monitoring of supply and demand is required to detect imbalances that may develop and to guide future nurse education planning.

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## RECOMMENDATION 1

No specific federal support is needed to increase the overall supply of registered nurses, because estimates indicate that the aggregate supply and demand for generalist nurses will be in reasonable balance during this decade. However, federal, state, and private actions are recommended throughout this report to alleviate particular kinds of shortages and maldistributions of nurse supply.

## Supply of Registered Nurses Educated in the Three Types of Generalist Programs

Although shortages are usually perceived in terms of aggregate supply, they also are frequently viewed by nurse educators and by some employers in terms of shortages or surpluses of RNs specifically prepared in one or more of the three different types of basic nurse education programs--diploma, associate degree (AD), and baccalaureate in nursing. In order to provide information that may be useful as background to more particularized analyses of nursing supply, the committee disaggregated its estimate of future national RN supply according to educational preparation.

As of 1980, of the overall supply of approximately 1.27 million employed RNs, 20 percent had an associate degree as highest level of educational attainment, 51 percent had a diploma, and 29 percent had a baccalaureate or higher degree. This total of employed RNs, as noted earlier in Table 11, is projected by the study to grow to between 1,643,000 (low projection) and 1,728,000 (high projection) by the end of 1990. Within the study's intermediate projection total of 1,710,000 employed RNs, the number of nurses with baccalaureate or higher degrees will have increased by about 257,000 and will make up about 36 percent of total (Table 16).*

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*The present supply and projected increases in nurses with master's and doctoral degrees are discussed in Chapter V.

TABLE 16 The Supply of Employed Registered Nurses, 1980 and Projected to 1990, by Highest Educational Preparation (Study's Intermediate Projection)

| Highest Educational Preparation | 1980[a] | | 1990 Intermediate Projection[b] | |
|---|---|---|---|---|
| | Number | Percent | Number | Percent |
| Diploma | 645,500 | 50.7 | 614,000 | 35.9 |
| Associate | 256,200 | 20.2 | 475,000 | 27.8 |
| Baccalaureate or higher | 364,400 | 28.6 | 621,000 | 36.3 |
| Unknown | 6,800 | 0.5 | - | - |
| TOTAL | 1,272,900 | 100.0 | 1,710,000 | 100.0 |

[a] SOURCE: DHHS, HRA. *The registered nurse population, an overview. From national sample survey of registered nurses, November, 1980*, Table 3, p. 11 (see Reference 4 for complete citation).

[b] SOURCE: West, M.D. *Projected supply of registered nurses, 1990: Discussion and methodology*, Table 16 (see Reference 2 for complete citation).

The number of nurses with diplomas or ADs who go on to receive baccalaureate degrees is growing steadily, the number of post-RN baccalaureates granted rising from 2,337 in 1972 to 8,416 in 1981 and projected to reach 14,000 in 1990.[41,42] Thus, about 100,000 of the 257,000 "baccalaureate or higher" additions to this supply component by 1990 are expected to come from post-RN graduations.

The number of active RNs with diplomas probably will have decreased somewhat by 1990 but still will make up a large group--over 600,000--and will constitute slightly over one-third of the total active supply. Associate degree graduates are expected to have increased by about 220,000 and will account for 28 percent of total. The younger nurses added to the supply primarily will have associate and baccalaureate degrees; deaths and retirements primarily will be among diploma graduates who make up the largest proportion of the older RNs.

A cross section of the study's intermediate projections of the 1990 supply of active RNs is shown in Figure 11 to indicate the effect of changing age and educational patterns. Here it can be seen that in 1990 the largest numbers of active RNs will be in their thirties. Graduates with diplomas will be older, with a median age of 45. The median age of those with associate degrees will be 35 years, and that for graduates with baccalaureate degrees will be 32 years. This figure also shows, in the narrow bands, the numbers who are expected to have attained their current level of preparation by moving from diploma or associate degree to a post-RN baccalaureate degree (D-B and A-B), and from each type of basic preparation to a master's level

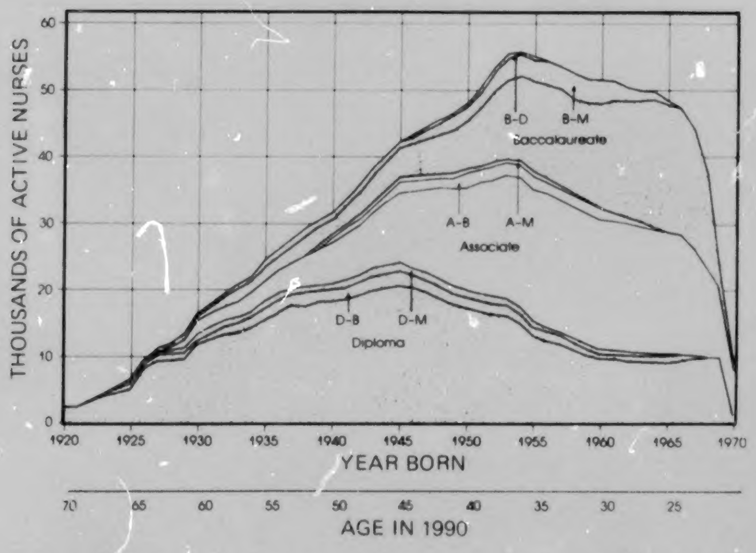

FIGURE 11 Supply of active registered nurses, 1990, by age and educational preparation (study's intermediate projection).

(D-M, A-M, and B-M). All nurses with doctorates are shown in the band labeled B-D.

The study's intermediate projected supply of RNs for the end of 1990 by highest educational preparation has already been shown in Table 16. This distribution is quite unlike that resulting from the WICHE panel's judgment-of-need projections for the beginning of 1990. Our supply projection estimates that there will be a much higher proportion of diploma and associate degree graduates than the WICHE (lower bound) judgment-of-need projection anticipates. Conversely, our study foresees that by 1990 the educational system will have produced a much lower supply of RNs with baccalaureate and advanced degrees than the WICHE process projected through its panel's judgment of need (Table 17).

TABLE 17 Percent Distribution of Active Registered Nurses in 1990, by Highest Educational Preparation, Study's Intermediate Projection, Compared With DHHS WICHE Lower Bound Projection of Need

| Highest Educational Preparation | Study's Intermediate Supply Projection[a] (December 1990) | Judgment-of-Need Projection[b] (Lower Bound) (January 1990) |
|---|---|---|
| Diploma/associate degree | 63.7 | 43.0 |
| Baccalaureate and higher | 36.3 | 57.0 |
| TOTAL | 100.0 | 100.0 |

[a] SOURCE: Table 16.

[b] SOURCE: Secretary, DHHS. Third Report to Congress, February 17, 1982: Nurse Training Act of 1975 (see Reference 10 for complete citation).

The implications of this table are that if the nation were to adopt the WICHE panel's goals, immediate massive shifts in educational distribution would be required--i.e., away from AD preparation of nurses toward preparation of greatly increased numbers at the baccalaureate and higher levels. In addition to greatly increased admissions and graduations from generic baccalaureate programs, dramatic acceleration of graduation rates from post-RN programs would also be required to advance large numbers of AD and diploma graduates to higher levels. The committee had no reliable basis for estimating the large additions to higher education budgets that would be entailed in implementing such shifts, or how they would be financed.

The study also found no basis for disaggregating its projections of employer demand for RNs in 1990 according to level of educational preparation. In view of the evidence noted in the preceding chapter on the diverse ways in which employers currently staff their facilities and agencies, and the lack of agreement among many who are professionally and managerially involved in the production and utilization of the nurse supply, the committee did not attempt to disaggregate its demand projections at the level of different types of educational preparation of generalist RNs. In projecting the likely configuration of the RN supply during the balance of the decade on these dimensions, the committee foresees that by 1990 the numbers of baccalaureate prepared nurses will have increased about 70 percent even in the absence of large shifts of educational resources (Table 16).

## State and Local Planning for Generalist Nurse Education

Both the specific demands for generalist RNs and the specific nature of the educational distributions that help to determine nurse supply are for the most part highly localized. Imbalances, if any, in supply and demand of RNs vary greatly from state to state and require assessment at subnational levels. Most decisions affecting the allocation of resources for nurse education take place at institutional and state levels. State and local governments through their postsecondary and vocational education systems, private universities and colleges, and to some extent hospitals, are involved in planning and paying for a substantial portion of the educational preparation of both RNs and LPNs.

Many groups and agencies in states have strong interests in these matters--professional, bureaucratic, and economic. At the state level, the official agencies typically having interest in nursing and nursing education include boards and commissions of higher education, departments of vocational education, state university systems, boards of nursing, statewide health planning agencies, and state health departments. Private organizations include state nursing associations, hospital and nursing home associations, third-party payers, and unions of hospital employees and of nurses.

A range of perspectives and interests are represented in local and state planning efforts. Hospitals and other potential employers like to have nurse education programs available in their localities to assure new recruits to their nursing staffs because, as will be described further in Chapter VI, the majority of newly licensed RNs, especially those with associate degrees and diplomas, as well as LPNs, begin their careers in the communities in which they were educated.[43] Legislators may be attuned to special problems of nurse shortages in their particular districts. Nurse educators and nursing service directors may hold strong but not necessarily similar views on the types of nurse education preparation that should receive priority. Furthermore, because the distribution of nurses with different levels of licensure and/or educational preparation found most appropriate for a particular patient caseload varies considerably according to geographic region, setting of care, and type and size of hospital, nursing service directors themselves may send mixed signals to educational planners. Finally, university systems and independent

4-year and 2-year colleges must balance the demand for nurse education against the competing demands of other programs.

## State Studies

Few states have organizational mechanisms for reconciling these interests in a continuing manner that can be related systematically to decisions on allocating resources for future nursing education. A common response to the problem is to conduct a special study. Our project analyzed reports of 75 statewide studies of nursing conducted in 45 states between 1977 and mid-1982. Most were sponsored by a state agency or by the state university system; 9 were conducted under the auspices of state nursing associations and 15 by state hospital associations. The sheer volume and rate of replication of these studies suggests broad concern with nursing issues at the state level. Both the importance and the difficulties of attempts to plan nursing education are apparent in the reports. A summary of information from the recent studies and a listing of major reports are included in Appendix 3.

Twenty-two of these state level studies present analyses and projections of future supply and needs. A variety of methodologies and data were employed. Most studies estimated both needs and supply. For RNs, 14 projected a potential deficit and 4 a potential surplus; in four cases the balance included both positive and negative results, depending upon the assumptions applied. For LPNs, five states projected that the supply would be adequate, eight that there would be a deficit, and one had mixed results. Seven did not estimate needs for LPNs. RN needs by educational level were estimated in 15 of the 22 studies. In these analyses, 13 studies projected an adequate or more than adequate future supply of RNs with diplomas or associate degrees, and the same number projected a deficit of RNs with baccalaureate and master's degrees.

The judgment-of-need process employed at the state level (WICHE model) parallels that of the national panel, described earlier. State panels, including nurses in leadership positions in nursing education and nursing service and other health profesionals, adopted assumptions about potential and desirable changes in health care conditions and practices, and about appropriate mixes of staff and levels of educational preparation required to handle anticipated responsibilities in different settings of care. These groups had the benefit of locally available information concerning health care needs and patterns of service, although deficiencies in needed data were usually encountered. Sometimes public hearings were held at which differing views could be expressed.

The state projections based on judgments of need adopted widely differing assumptions as to appropriate staffing levels and mix of nurses (by type of educational preparation) and of other nursing service personnel. Differences in assumptions resulted in substantial ranges of estimated nursing staff needed per 100 patients from one state to another, for similar practice settings. To illustrate the wide variations in expert opinion among different states, Table 18 displays the results of the criteria adopted by the national WICHE

TABLE 18 Expert Panels' Judgment of Required Nursing Staff for Hospital Inpatient Services, U.S. and Eight States, Using WICHE Methodology (Lower Bound)

|  | FTE Staff per 100 Patients |  |  |  | Ratio |  |  | Hours per Patient per Day |  |  | Educational Preparation |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | RN | LPN | Aide | Total | RN | LPN | Aide | RN | Total | %RN | Doctorate | Master's | Baccalaureate | Associate Degree/ Diploma | Associate Degree | Diploma |
| National panel | 49.0 | 12.0 | 12.0 | 73.0 | 10.0 | 2.4 | 2.4 | 2.4 | 3.6 | 67.0 | - | - | 50.0 | 50.0 | - | - |
| Alabama | 73.9 | 39.9 | 0.0 | 113.8 | 10.0 | 5.4 | 0.0 | 4.2 | 6.5 | 65.0 | - | 7.5 | 60.0 | - | 20.0 | 12.5 |
| Colorado | 81.0 | 20.0 | 0.0 | 101.0 | 10.0 | 2.5 | 0.0 | 4.0 | 5.0 | 80.0 | - | - | 50.0 | 50.0 | - | - |
| Mississippi | 40.0 | 20.0 | 30.0 | 90.0 | 10.0 | 5.0 | 7.5 | 2.0 | 5.0 | 40.0 | - | 5.0 | 20.0 | 75.0 | - | - |
| New Hampshire |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| General units | 32.3 | 22.6 | 0.0 | 54.9 | 10.0 | 7.0 | 0.0 | 1.6 | 2.7 | 59.0 | - | 3.0 | 55.0 | 42.0 | - | - |
| Primary care | 48.5 | 29.1 | 0.0 | 77.6 | 10.0 | 6.0 | 0.0 | 2.4 | 3.8 | 83.0 | - | 3.0 | 55.0 | 42.0 | - | - |
| Ohio |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| General units | 79.0 | 37.0 | 6.0 | 122.0 | 10.0 | 4.7 | 0.8 | 3.9 | 6.0 | 65.0 | - | - | 60.0 | - | 15.0 | 25.0 |
| Pediatrics | 92.0 | 43.0 | 7.0 | 142.0 | 10.0 | 4.7 | 1.0 | 4.5 | 7.0 | 65.0 | - | - | 60.0 | - | 15.0 | 25.0 |
| Rhode Island | 48.0 | 15.0[a] | - | 63.0 | 10.0 | 3.1[a] | - | 2.4 | 3.1 | 77.0 | - | 6.0 | 35.0 | 59.0 | - | - |
| West Virginia | 47.5 | 15.7 | 6.0 | 69.2 | 10.0 | 3.3 | 1.3 | 2.3 | 3.4 | 68.0 | - | - | 20.0 | - | 30.0 | 50.0 |
| Wisconsin | 80.0 | 0.0 | 20.0 | 100.0 | 10.0 | 0.0 | 2.5 | 3.9 | 4.9 | 80.0 | - | 5.0 | 20.0 | - | 75.0 | - |

[a] LPN/aides combined.

SOURCE: Kearns, J.M. Cooper, M.A., and Uris, P.F. Comparison of the rationale and criteria for staffing developed by the National Panel of Expert Consultants with those developed by panels of eight states (Revised February 1981) (see Reference 43 for complete citation).

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panel for inpatient services in short-term hospitals with more than 100 beds (lower bound) and compares them with the results of the WICHE panels in eight states.[44] When the outcomes of local panels' judgments in these states are compared to the conclusions of the national panel, wide differences are evident. Judgments about requirements in hospitals for RN staff ratios per 100 patients, levels of RN educational preparation, and ratios of LPNs and aides to RNs vary considerably. Another striking difference is in the total number of hours of nursing services the panels assumed were needed per patient day.

These differences among the eight state panels of experts, compared to the national criteria, are summarized in an analysis by Kearns and her associates as follows:

> Five states increased the total hours of direct care a patient receives per day. Three states increased registered nurses and licensed practical nurses and eliminated or significantly decreased aide staff. One state increased the number of registered nurses and aides and eliminated the licensed practical nurses staff. One state decreased the number of registered nurses but increased both the licensed practical nurses and aide staff. Two states were slightly lower in the total hours of care which was reflected by a slight increase in the number of registered nurses, a decrease in the number of aides and an increase in the number of licensed practical nurses. One state significantly decreased the number of total hours of care. This state decreased the number of registered nurses, eliminated the aide staff and increased the licensed practical nurse staff. The one state that identified a separate pediatric category recommended an increase in the number of hours of care by dramatically increasing registered nurses and licensed practical nurses and decreasing aide staff. For the educational preparation of the registered nurse, most states were comparable to the National Panel or above, except three indicated 75 to 80 percent of the registered nurses at less than baccalaureate.[45]

Such differences among panelists' judgments indicate that a wide range of opinions exist among professional experts concerning appropriate and necessary nurse staffing goals in different parts of the nation. To the extent that these judgments are influenced by existing wide variations among states in health care expenditures, utilization of services, and manpower, they may also reflect realities of living standards, societal perspectives, and per capita financial resources.

Those who allocate resources to initiate or maintain support for different types of nursing education programs at the state level frequently do not have sufficient reliable information at hand on the probable future market demand for their graduates and on the relative ability of those graduates to satisfy the needs of various types of employers. Information on hospital and nursing home vacancies provides little guidance, because when the qualifications for desired applicants for generalist nurse positions are specified, they usually are expressed in terms of required clinical nursing experience rather than the type of basic nursing education that candidates for employment are expected to have. Hospitals (and nursing homes) rarely maintain their personnel records in ways that permit analysis of the proportions of RNs employed according to type of basic nurse education received. Administrators rarely have a sufficient statistical base to analyze how education may correlate with promotions, turnover, or other empirical measures of performance. Results from hospital opinion surveys indicate a range of views. Many administrators indicate preferences for either baccalaureate or diploma graduates. This viewpoint corresponds to the empirical evidence about average ratings in standard examination scores discussed in Chapter VIII.

Available reports indicate that state nursing studies have had diverse impacts on decision making in the states. In some cases, follow-up efforts have been organized to implement their recommendations. However, an earlier review of state studies, in 1978, showed that at that time 28 states had developed master plans for nursing education, but their provisions were rarely implemented.[46] In some states when the results of a study by one sponsoring group have been unacceptable to other groups within the state, alternative studies have been undertaken. As noted, few states have continuing mechanisms to monitor and consider changing needs and resources.

Nonetheless, it is clear that recent studies have placed issues of educational differentiation squarely on the agenda of nursing education policy discussion at the state level. They also have spurred a widespread interest in educational mobility, as will be discussed in Chapter IV. The consideration being given to reorganizing health services planning activities in the states and at the national level also is relevant. Planning for health services must, of course, take into account nursing resources and needs. Many state health planning agencies have conducted and contributed to nursing studies in recent years. Future planning efforts for health services in general, and nursing resources in particular, should be closely coordinated.

## Conclusion

Although fully cognizant that substantial changes in political, economic, and professional activities at the state level rarely are the direct result of the development of master plans, the committee nevertheless believes continued efforts are needed in the states to coordinate the planning and resource allocation decisions for nursing education and the development of nursing personnel. It is evident that in most states, serious attempts have been undertaken to better understand the nursing shortage problem and to identify possible solutions. The committee has noted the apparent inefficiency of efforts within many of these states as they struggle to ascertain their current and future needs for registered and practical nurses and to identify related nursing education priorities.

In reviewing large numbers of state studies of nursing, the committee found that many official state agencies seek the participation of various interested parties in seeking agreement on goals for basic nursing education. A broadly representative commission format appears to be useful in planning policy or stimulating program development. However, in many cases, studies and actions are not effectively coordinated, arrangements for follow-up are inadequate, or agreement is not reached among those responsible for resource allocation decisions. Closer and continuing communication between those who design state and local education programs and local employers will encourage accommodation between education and practice goals.

Projections of needed future supply appear to be hampered by the absence of continuing processes to consider systematically the potential future estimated market demand for registered nurses and licensed practical nurses by hospitals and other employers. The committee concluded that a relatively small outlay of federal technical assistance dollars employed to develop demand forecasting techniques better suited to state uses would yield benefits in strengthened state planning efforts.

As a further means of overcoming these problems, the committee considered the possibility of federal nursing education planning grants to states upon demonstration that they have effective mechanisms in place to carry out the responsibilities outlined. This concept, embodied in recent health manpower proposals before the Congress, was successfully implemented in regard to planning for the full scope of postsecondary education in the years between 1972 and 1980 under Section 1203 of Title XII of the Federal Higher Education Act of 1965. A total of approximately $3.5 million in comprehensive planning grants was distributed across all eligible states each year. Though such planning was voluntary, eventually all but one or two states became eligible. The effects of improving the process of planning for postsecondary education are reported to have been salutory.

Another possibility entertained by the committee was to require evidence of implementation of a state nurse planning program as a condition of receiving federal funding for state-sponsored nursing education activities that involve programmatic (as distinct from student) support. Private educational institutions, of course, should not be penalized in such support simply for inability to conform or for lack of state action, because their programs are often designed to meet private sector as well as interstate and national needs and should be considered on their merits.

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RECOMMENDATION 2

The states have primary responsibility for analysis and planning of resource allocation for generalist nursing education. Their capabilities in this effort vary greatly. Assistance should be made available from the federal government, both in funds and in technical aid.

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## CHAPTER III

# The Effects of Education Financing on Generalist Nurse Supply

Annual admissions to basic nursing education programs grew rapidly during the 1970s, increasing by almost 37 percent between academic years 1970-1971 and 1979-1980.[1,2] Although the rate of growth has declined in recent years, the output of basic nursing education programs is projected to be sufficient to meet aggregate national demand during the period of the 1980s (Chapter II).

These aggregate projections, however, do not reveal the complex decision making that ultimately determines the size and composition of the future supply of registered nurses (RNs) and licensed practical nurses (LPNs). Potential students have choices among educational programs, each with its own set of attributes, including propinquity, cost, availability of financing, and future career opportunities. State and local governments face competing claims on public funds, of which postsecondary education is only one. Educational institutions must allocate the funds available to them from the state, private sources, and the federal government among nursing and other educational programs and, within nursing, among associate and baccalaureate degree programs leading to licensure as a RN, as well as LPN programs. Hospitals, too, must decide whether to continue to offer diploma nursing programs and whether to subsidize nursing education in other ways. At every level of decision making, a variety of personal, social, political, and economic factors come into play.

As Congress recognized in its charge for this study, one of the major factors influencing student, government, and institutional decisions is the cost of undertaking or providing nursing education and the extent to which funds are available to meet the cost. Thus, the comparative costs of various educational pathways to nursing and the system of financing nursing education have a great deal to do with the number and characteristics of students who choose such education and with the capacity of the various types of programs. This study has attempted to answer the congressional questions on comparative educational costs and on sources of financing to the extent that data could be found or developed. Estimates of student and institutional costs for various nurse education programs, however, require caution in their application. Comparisions among programs and conclusions as to the societal utility or professional value of one type or another should not be made on cost consideration alone.

This chapter discusses the financing of nursing education as it affects both individual and institutional decision making. (It does not deal with graduate education, which is treated in Chapter V; it covers only education to prepare generalist RNs, except when LPNs are specifically noted.) Here, federal policies and programs are viewed as exogenous factors that play a role in these decisions. Dollars expended for federal student aid programs and the conditions under which they are awarded, as well as federal laws and regulations governing expenditures under Medicare and Medicaid, exercise their own set of influences on individual and institutional behavior by providing direct incentives and disincentives and also by indicating national priorities.

## Student Decision Making

Potential nursing students contemplating a basic nursing education program are faced with difficult choices that have long-term implications. They have to consider the extent to which their abilities and interests match the requirements of the education program and the responsibilities of positions typically held by program graduates. In addition, some very practical issues have to be faced. One of these is the availability of education programs within the student's geographic range. Another is the magnitude of the investment of time and money required to complete the program and the availability of funds to cover the costs. Finally, the student must consider the prospects for future employment, potential earnings, and probable job satisfaction. For women students who foresee combining childrearing with work, the compatibility of different occupations with parenthood may be a consideration, as is discussed in other sections of this report. Obviously, potential students' choices are not limited to the three types of basic nursing education programs; presumably they also can consider many other kinds of postsecondary education programs. Thus, not only do nursing education programs compete with each other for students, they also compete with programs in such fields as biology, allied health, the social sciences, engineering, premedicine, and prelaw. Essentially, the choice to enter a basic nursing education program is a choice of occupation. While the choice may not be for life--certainly, people do change careers--it nonetheless carries with it a substantial investment of time and money and thus is not a choice that many people make more than once. As economists have suggested, the potential student's decision may be viewed as a long-term investment decision.[3] This is not to disregard the immediate satisfaction derived from education itself, but rather to underscore the fact that educational decisions carry relatively long-term consequences.

### Students' Education Costs

A student must meet certain out-of-pocket costs if she or he is to undertake an education program in nursing or in any other field.

There are tuition and fees charged by the educational institution and other educational expenses, such as books and supplies. Living expenses, including rent, food, clothing, and transportation, must be met for the duration of the education program. In addition to these out-of-pocket expenses, students have to face the prospect of forgone earnings as they spend time in education that otherwise might have been spent working.

Tuition and Fees According to data from the National League for Nursing (NLN), annual tuition and fees vary widely among the different types of nursing education programs and between public and private programs of each type. Median tuition and fees for 1981-1982 are shown in Table 19. Tuition and fees also vary greatly within each type of education. For public associate degree programs they ranged from under $500 to over $5,500 in 1981-1982, although almost one-third of programs had tuition and fees less than $500 and only one program exceeded $5,500, according to unpublished data from NLN. Among private associate degree programs, only two reported tuition and fees under $500. Only one public baccalaureate program reported tuition and fees exceeding $3,000, but 10 percent of private baccalaureate programs charged more than $5,500. These programs have the highest tuition and fees; the median in 1981-1982 was approximately $3,900. For the current (1982-1983) academic year a few baccalaureate programs in private institutions report tuition close to $8,000.[4]

Other Out-of-Pocket Education Expenses Specific data on nursing students' other out-of-pocket education expenditures are not available, but they may be approximated from the expenses for all students in

TABLE 19 Median Annual Tuition and Fees for Basic Nursing Education Programs, by Type of Program and Public-Private Control, 1981-1982 (dollars)

| | Type of Control | |
|---|---|---|
| Type of Program | Public | Private |
| Associate degree | $ 684 | $3,196 |
| Diploma | 1,083 | 1,572 |
| Baccalaureate | 996 | 3,880 |

SOURCE: NLN nursing data book 1982, Tables 14, 15, and 16 (see Reference 2 for complete citation).

public and private 2-year and 4-year colleges (Table 20). The range of these expenses is very small. Although no data are available for diploma students, we assume their expenses for books and supplies to be halfway between the lowest and highest figures, or $250 in 1981-1982.

By assuring that average annual expenses for associate degree (AD) nursing students are similar to all students in 2-year colleges and that expenses for baccalaureate nursing students are similar to all students in 4-year colleges, it is possible to estimate the total out-of-pocket educational expenses for students undertaking AD (2-year), diploma (3-year), and baccalaureate (4-year) programs (Table 21). For a student entering in 1981-1982, the first year's total expenses would average $920 for an AD program in a public institution and $1,250 for a baccalaureate program in a public institution. In private institutions, these expenditures would average $3,440 and $4,140, respectively. A student starting in 1981-1982 could complete an AD program in a public institution for an average outlay of under $2,000; to complete a public diploma or baccalaureate program would require an average outlay of approximately $4,300 or $6,740, respectively. To complete a private baccalaureate program would require average outlays of almost $18,500.

*Living Expenses* In addition to tuition and fees, books, and other educational supplies, students must pay living expenses during their education program: housing and food; personal expenses such as clothing, laundry, and medical insurance; and transportation expenses. Annual living expenses in 1981-1982 for those in categories as defined by the College Board are shown in Table 22. Self-supporting, or independent, students have the highest living expenses.

*Summary of Education and Living Expenses* In order to complete an education program leading to RN licensure, a student must be prepared to meet substantial out-of-pocket expenses. These vary a great deal depending on the type of program, on whether the program is located in a public or private educational institution, and on the living circumstances of the student. A student living with parents and attending a public 2-year AD program beginning in 1981-1982 will incur an estimated $1,900 for tuition and fees, plus books and educational supplies. If living costs are assumed to increase by 6 percent between the 1981-1982 and 1982-1983 academic years, that student also will have to bear (for the 2-year program) living expenses of approximately $4,460, for total out-of-pocket expenses of $6,300. A self-supporting student in the same educational program will, on average, face total out-of-pocket expenses of $11,300; a resident student's total expenses will be approximately $7,100. To complete the 4-year baccalaureate program requires much greater average outlays. Again if living expenses are assumed to increase by 6 percent annually, a resident student enrolled in a public baccalaureate program will face total out-of-pocket expenses of $18,800; if that student attends a private baccalaureate program, the total will be $31,200.

The range of average total outlays is estimated to be from roughly $6,400 for a commuter student attending a public AD program to almost $31,000 for a resident student who attends a private baccalaureate

TABLE 20 Average Annual Student Expenses for Books and Education Supplies by Type of Institution and Public-Private Control, Academic Year 1981-1982 (dollars)

| Institution Type/Control | Average Student Expenses |
|---|---|
| Four-year colleges | |
| Public | $251 |
| Private | 263 |
| Two-year colleges | |
| Public | 235 |
| Private | 241 |

SOURCE: College Entrance Examination Board. *College cost book 1981-1982* (see Reference 49 for complete citation).

TABLE 21 Estimated Total Out-of-Pocket Education Expenses for Full-Time Students in Basic Nurse Education Programs, Academic Year 1981-1982, and Estimated Total Expenses to Complete Each Type of Program for a Student Entering in 1981-1982 (dollars)

| | Associate Degree | | Diploma | | Baccalaureate | |
|---|---|---|---|---|---|---|
| Period of Expenses | Public | Private | Public | Private | Public | Private |
| 1981-1982 academic year[a] | $ 920 | $3,440 | $1,330 | $1,800 | $1,250 | $ 4,140 |
| Total program[b] | 1,900 | 7,250 | 4,300 | 5,900 | 6,740 | 18,450 |

[a] Annual figures for 1981-1982 are computed by adding median tuition and fees for nursing students (Table 19) to mean expenses for books and supplies for all college students (Table 20). For diploma students, their latter expenses were assumed to be $250, halfway between the lowest and highest figures reported by the College Board.

[b] Total out-of-pocket expenses to complete the program for a student entering in 1981-1982. Tuition and fees are inflated at an annual rate equal to the average annual increase for the period 1977-1978 to 1980-1981. Books and supplies are inflated at the same rate as the Consumer Price Index for nondurable commodities (less food) between 1977 and 1980. The estimates assume that associate degree programs require 2 years, diploma programs 3 years, and baccalaureate programs 4 years.

SOURCES: *NLN nursing data book 1982*, Tables 14, 15, 16 (see Reference 2 for complete citation); College Entrance Examination Board. *The college cost book, 1981-1982* (see Reference 49 for complete citation); *NLN nursing data book 1979* (see Reference 50 for complete citation); U.S. Bureau of the Census. *Statistical abstract of the United States: 1980* (101st ed.), Table 808, p. 487 (see Reference 51 for complete citation).

TABLE 22 Estimated Annual Living Expenses for Resident, Commuter, and Self-Supporting Students, by Type of Education Institution, 1981-1982 Academic Year

| Type of Expense | Two-Year Institution Public | Two-Year Institution Private | Four-Year Institution Public | Four-Year Institution Private |
|---|---|---|---|---|
| Total | | | | |
| Resident students[a] | $2,526 | $2,731 | $2,803 | $2,913 |
| Commuter students[b] | 2,125 | 1,844 | 2,080 | 2,027 |
| Self-supporting students[c] | 4,555 | 3,865 | 4,333 | 4,262 |
| Room and board | | | | |
| Resident students | $1,615 | $1,926 | $1,846 | $2,043 |
| Commuter students | 931 | 881 | 915 | 988 |
| Self-supporting students | 2,917 | 2,628 | 2,756 | 2,827 |
| Personal expenses[d] | | | | |
| Resident students | 583 | 529 | 667 | 557 |
| Commuter students | 608 | 525 | 626 | 575 |
| Self-supporting students | 925 | 750 | 1,002 | 896 |
| Transportation | | | | |
| Resident students | 328 | 276 | 290 | 313 |
| Commuter students | 586 | 438 | 539 | 464 |
| Self-supporting students | 713 | 487 | 575 | 539 |

[a] Dependent students living on campus (or adjacent to campus) in a campus owned, operated, or authorized building.
[b] Dependent students living at home with parent or guardian and attending local campus.
[c] Students who are considered independent of parental support, wherever they reside.
[d] Expenses for clothing, laundry, recreation, medical insurance, etc.

SOURCE: College Entrance Examination Board. The college cost book 1981-1982 (see Reference 49 for complete citation).

program. A student attending one of the private baccalaureate programs with annual tuition in the [illegible],000-$8,000 range would face total outlays of roughly $40,000, if the student lives on campus. A self-supporting student in such a program would have to meet expenses of over $50,000.

Nursing students' out-of-pocket expenses may be somewhat understated by the average figures for all college students used in these calculations, because they have expenses such as the purchase of uniforms and transportation to and from facilities where clinical education takes place.

Forgone Earnings The largest education "cost" is not a cash expense but rather the opportunity cost of the student's time, usually measured by potential earnings forgone during the education program. In the case of a student entering nursing education immediately after high school and not working during the education program, forgone earnings may be estimated as equivalent to the average earnings of a full-time year-round worker who has completed high school. For 1980 the Census Bureau estimated such earnings to be approximately $11,000 for women and $18,300 for men.[5] If a student works half time, forgone earnings are less, but the student requires more calendar time to complete the program than students who do not work; therefore educational expenses could be greater.

Forgone earnings would be considerably higher for potential students who have education beyond high school, such as RNs seeking a baccalaureate degree. Their earnings would depend on their length and type of experience, but on average would be approximately $17,000, according to data from the National Sample Survey of Registered Nurses, November 1980.[6] Such students are likely to have family responsibilities and relatively fixed financial obligations, making it more difficult for them to meet their expenses while attending school. On the other hand, RNs can earn more from part-time work than can other nursing students.

Although forgone earnings compose a large element of the cost for a student undertaking a nursing education program, they have not been added into total costs for several reasons. There is wide variation in what nursing students could earn depending on their education, experience, and ability. Anecdotal evidence suggests that many students work part time while they are enrolled in nursing education programs, and thus actual earnings should properly be deducted from potential earnings in estimating earnings forgone. Even though they are not included in an estimate of total education costs, the study group recognizes that the loss of potential earnings associated with partial or total withdrawal from the labor force and the concomitant demands of trying to meet substantial out-of-pocket education and living expenses can present a significant barrier to potential entrants to nursing education.

Sources of Variation in Students' Costs The most important factor contributing to variation in costs of nursing education is the time required to complete the program. The longer the program, the higher the education expenses, the greater the living costs, and the larger the forgone earnings. Another major factor is the choice of a public or a private program. Private education institutions depend on student payments--tuition and fees--to cover a greater proportion of education costs than do publicly supported institutions. As has been shown in Table 19, median annual tuition charges by private AD and baccalaureate programs are several times the charges by public programs. Even among public programs, tuition charges can vary a great deal, depending on state and local government policies on higher education subsidies from tax dollars. States such as Texas and California traditionally have set tuition charges very low; other states, where state appropriations per student are relatively low, such as New Hampshire and Vermont, have set tuition charges much higher.[7]

A third factor influencing students' education costs is their living expenses. Traditional student budgets for living expenses are based on assumptions of living in a college dormitory (resident) or with parents (commuter). For adult students with established households, however, it may be necessary to continue meeting mortgage, utilities, and maintenance expenses on a residence while they are in school.

The fourth major factor is students' opportunity costs, which, as noted above, depend on the amount of education they have previously obtained, as well as their work experience. A traditional student who attends college immediately after high school has the lowest opportunity costs; students who have worked or who have obtained education past high school have higher opportunity costs. These students also may earn more from part-time employment; however, their elapsed time to complete the education program may increase if they are unable to carry a full course load.

## Trends in Education Expenses

Students' education costs have risen rapidly over the past few years and are projected to continue on a steep increase. In public 4-year colleges, average tuition and fees rose approximately 33 percent in the 4-year period between 1976-1977 and 1980-1981; the American Council on Education projects that they will rise an additional 36 percent by 1984-1985. Average tuition and fees for private 4-year colleges rose by 29 percent between 1976-1977 and 1980-1981 and the Council projects that they will rise by another 22 percent by 1984-1985.[8] The College Scholarship Service reports that average tuition and fees for public 4-year institutions are 20 percent higher in the fall of 1982-1983 than in the previous fall; in private 4-year institutions they have increased by 13 percent.[9] These increases can be attributed both to increases in the operating expenses of educational institutions and in the proportion of the costs of education charged to students (discussed at greater length below). Living expenses, which have risen at double digit rates for the past few years, have now declined to a rate of approximately 6 percent.

Nursing students come largely from families of modest means. The annual survey of first-time, full-time freshman conducted annually by the Cooperative Institutional Research Program (CIRP) of the University of California at Los Angeles and the American Council on Education gives an indication of the family income distribution of nursing students in relation to all college freshmen in the fall of 1981

(Table 23).* Although 44 percent of all first-time, full-time college freshmen were from families with annual incomes of $25,000 or above, the percentage for nursing freshmen was 32 percent. In addition, a larger proportion of nursing students were independent of parental support and therefore responsible for financing their own education.

Nurses cannot look forward to substantial earnings in return for their educational investments. According to data from the NLN's annual survey of newly licensed nurses, in 1980 the median annual salary for nurses 6 to 8 months after graduation was $14,100.[10]

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*The CIRP survey includes data from a stratified sample of approximately 400 higher education institutions drawn from the population of approximately 2,700 institutions listed in the U.S. Office of Education (now Department of Education) Education Directory. Student responses are based on a sample of approximately 200,000 first-time, full-time freshmen in the sample institutions.

TABLE 23 Estimated Family Income Distribution of First-Time, Full-Time Freshmen, Fall 1981

| | Nursing Students[a] | | All Students | |
|---|---|---|---|---|
| Family Income | Estimated Number | Estimated Percent | Estimated Number | Estimated Percent |
| All | 67,758 | 100.0 | 1,729,985 | 100.0 |
| Under $5,999 | 4,704 | 6.9 | 74,093 | 4.3 |
| $6,000-9,999 | 4,097 | 6.0 | 83,336 | 4.8 |
| $10,000-14,999 | 7,517 | 11.1 | 169,890 | 9.8 |
| $15,000-24,999 | 14,398 | 21.2 | 375,860 | 21.7 |
| $25,000-29,999 | 5,582 | 8.2 | 168,248 | 9.7 |
| Over $30,000 | 16,002 | 23.6 | 580,406 | 33.5 |
| Income unknown | 10,457 | 15.4 | 221,893 | 12.8 |
| Independent students[b] | 5,001 | 7.1 | 56,263 | 3.2 |

[a] Freshmen students enrolled in a nursing education program or indicating nursing as a career choice.

[b] Students who are independent of parental support and therefore not required to report family income. These students also are referred to as "self-supporting."

SOURCE: Study analysis of unpublished data from the 1981 Cooperative Institutional Research Program Survey conducted by the American Council on Education and the University of California at Los Angeles, provided by the National Center for Education Statistics.

Starting salaries have risen sharply since 1978; however, nurses' earnings increase very little with experience. An analysis of the National Sample Survey of Registered Nurses, November 1980, indicates very small increments in monthly earnings for each additional year of work experience (see Chapter VII). Thus, potential earnings over the entire working life have not been very large and, barring changes in the nurse salary structure, cannot be expected to increase very much in the future.

## Sources of Education Financing for Nursing Students

Nursing students finance their educational outlays and living costs from a combination of sources, including general federal programs of financial aid for postsecondary students, Nurse Training Act scholarship and loan programs (limited specifically to nursing students), state and collegiate grant programs, earnings, savings, and family support. Unfortunately, only extremely outdated information is available on the proportions of support from the various sources and how those proportions vary among students in the different types of basic nursing education programs. A survey of nursing student finances was undertaken under the sponsorship of the DHHS, Division of Nursing in 1969-1970, but current comprehensive information is unavailable.[11] This situation is in constrast to that in most of the health professions, for which there are relatively frequent periodic surveys of education financing.[12]

The limited available evidence suggests that nursing students depend substantially on general federal student aid programs. According to 1981 data from the Cooperative Institutional Research Program (CIRP) survey, an estimated 61 percent of first-time, full-time freshmen who were enrolled in nursing education programs or indicated nursing as their intended career expected to receive some amount of federal financing for their first year of study (Table 24). (Because of the wording of the question on sources of financing, this percentage refers only to general federal financial aid programs, available to all postsecondary students. It does not include Nurse Training Act scholarship and loan funds.) For all freshmen, the survey estimated that 53 percent were receiving federal support.

Approximately 40 percent of first-time, full-time nursing students receive loan funds, with 26 percent receiving federal guaranteed student loans. Sixty-five percent of them expected to finance a portion of their first year's expenses through work in the summer or during the academic year. State scholarship funds were received by 16 percent of these students in 1981.

*General Federal Financial Aid* The major programs of general federal financial aid to postsecondary students are Pell Grants, Supplemental Educational Opportunity Grants (SEOG), Guaranteed Student Loans (GSL), National Direct Student Loans (NDSL), and the College Work-Study Program. Whereas other programs are aimed at specific entitlement groups (for example, GI Bill education benefits for

TABLE 24 Sources of Financial Support for Nursing Students Who Were First-Time, Full-Time Freshmen in 1981

| Type of Support | Estimated Percent of Nursing Freshmen Receiving Support[a] | Estimated Average Amount Received Per Recipient |
|---|---|---|
| All grants | 54 | $1,291 |
| Pell Grants[b] | 35 | 855 |
| Supplementary Educational Opportunity Grants[b] | 7 | 668 |
| State grants | 16 | 683 |
| College grants | 11 | 826 |
| All loans | 39 | 1,698 |
| Guaranteed Student Loans[b] | 26 | 1,731 |
| National Direct Student Loans[b] | 8 | 1,139 |
| All work | 65 | 999 |
| College work-study[b] | 13 | 689 |
| Part-time work | 27 | 504 |
| Full-time work | 3 | 940 |
| Summer work | 43 | 608 |
| Parents | 70 | 1,143 |
| Savings | 19 | 656 |
| All federal aid[c] | 61 | 1,756 |

NOTE: "Nursing students" refers to respondents enrolled in nursing education programs or indicating nursing as their career preference.

[a] Percentages are not additive because students may receive support from multiple sources. The survey population consists of 2-year colleges, 4-year colleges, and universities, and therefore these figures do not apply to first-year students in diploma programs. The study sample included 6,075, representing a population of over 67,000 nursing students.

[b] Programs of general federal financial aid for postsecondary students.

[c] Owing to survey definitions, this category represents general federal financial aid programs only and does not include Nurse Training Act programs.

SOURCE: Study analysis from the 1981 Cooperative Institutional Research Program Survey, conducted by the American Council on Education and the University of California at Los Angeles, provided by the National Center for Education Statistics.

veterans and Social Security education benefits for children of Social Security beneficiaries), these postsecondary programs stem from a broad concern for equality of educational opportunity that originated legislatively with the Higher Education Act of 1965.[13,14,15] Expenditures under these authorities have grown enormously. In 1965, federal spending for student assistance was $250 million; by 1981, it exceeded $7 billion.[16] Appropriations for these programs, described at some length below, appear in Table 25.

TABLE 25 Federal Appropriations for Higher Education, Selected Programs, Fiscal Years 1981-1983 (in millions of dollars)

| | 1981 | 1982 | 1983[a] |
|---|---|---|---|
| Pell Grants | $2,346 | $2,419 | $2,419 |
| Supplemental Educational Opportunity Grants | 370 | 355 | 355 |
| Guaranteed Student Loans | 2,900[b] | 3,073[b] | 3,100 |
| College work-study | 550 | 528 | 540 |
| Vocational education | 674 | 648 | 721[c] |
| National Direct Student Loans | 201 | 179 | 179 |
| State Student Incentive Grants | 77 | 74 | 60 |
| TOTAL | $7,118 | $7,276 | $7,374 |

[a] Per continuing resolution, public law, December 21, 1982.
[b] Estimated by the Congressional Budget Office.

SOURCES: 1981 Appropriations from Congressional Budget Office. Federal student assistance: Issues and Options (see Reference 13 for complete citation); and 1982 and 1983 Appropriations from Committee on Education and Labor, Subcommittee on Postsecondary and Subcommittee on Elementary, Secondary, and Vocational Education.

The Pell Grant Program was established in the Education Amendments of 1972 (Title IV, P.L. 92-318, as amended). One of the largest federal programs of support to postsecondary students, with appropriations of almost $2.5 billion in 1982, the program is intended to provide educational access and choice to qualified students through grants of $200-$1,750 in the 1980-1981 academic year, the amount depending on how much a student's family is expected to contribute to the student's financing.[17] To qualify, students must be enrolled on at least a half-time basis in an eligible program in an eligible institution. The program has grown from fewer than 200,000 recipients in 1973-1974 to approximately 2.8 million recipients in 1980-1981. It provides assistance to a large majority of low-income students.[18] As a consequence of the Middle Income Student Assistance Act of 1978, Pell (formerly Basic Education Opportunity) Grants became available to higher income students and total dollar awards increased for all income categories.[19]

Whereas in 1976-1977 only 11 percent of Pell Grant recipients who were dependents came from families with incomes over $12,000, this figure was 36 percent in 1979-1980.[20] In 1978-1979, 32 percent of independent (self-supporting) students received Pell Grants.[21]

Also part of Title IV of the Education Amendments of 1972, the Supplemental Educational Opportunity Grants (SEOG) program makes grants available, through institutions of higher education, to students in financial need who are enrolled at least half time. Institutions apply for these funds, which are allotted to states for further allocation to institutions within the state. Approximately, one-half million students were SEOG recipients in 1978-1979. In 1980-1981, the average award was $600; the maximum award is $2,000.[22]

The State Student Incentive Grant Program (SSIG) is intended to encourage state assistance to students with "substantial financial need." Also established in the 1972 amendments of the Higher Education Act, the program is a 50-50 state-federal cost-sharing program. Federal funds are allotted to states on the basis of student attendance patterns. States, which administer the program, select grant recipients for awards of up to $2,000. Not all states had grant programs for postsecondary students when the SSIG program began; however, by 1978, all eligible states and territories had become part of the SSIG program. Level of state commitments to student aid vary greatly. Six states, for example, have traditionally large programs: New York, Pennsylvania, Vermont, Illinois, New Jersey, and Minnesota. In these states, federal SSIG funds represent 5 percent or less of total state grant payouts. In 16 states, however, state payouts are at the minimum levels required to match the available federal funds; thus, the state share of the total is 50 percent. These states are Alabama, Alaska, Arizona, District of Columbia, Hawaii, Idaho, Louisiana, Mississippi, Montana, Nebraska, Nevada, New Hampshire, New Mexico, Oklahoma, South Dakota, and Wyoming.[23]

The federal GSL program was enacted in the Higher Education Act of 1965. By far the largest student financial assistance program, it provides long-term, low-interest loans to students attending eligible institutions of higher education, and also vocational, technical, business, and trade schools. Undergraduate students are eligible for loans of up to $2,500 per year under the program, with total loans not to exceed $12,500. These loans are available to all students enrolled in eligible institutions, regardless of their family income level. Interest, accruing at the rate of 9 percent, is paid by the federal government while the student is in school. The student must begin paying the interest and repaying the principal within 6 months after leaving school, although deferments are possible for service in the armed forces, the Public Health Service Commissioned Corps, the Peace Corps, or other comparable full-time volunteer service. Payments also may be deferred during preprofessional internships of up to 2 years, during up to 1 year of unemployment, and during periods of total disability of up to 3 years.[24]

The National Direct Student Loan Program originally was enacted as the National Defense Loan Program in 1958 (P.L. 85-864). Funds are allotted states by formula; however, the loans are made by postsecondary institutions to students in financial need. The average amount borrowed per year is approximately $800. Students in vocational and 2-year colleges may borrow a maximum of $3,000; students who have completed 2 years toward a bachelor's degree may borrow up to $6,000. Repayments begin 6 months after the student leaves school, although repayment may be deferred in cases similar to those permitted deferments under the GSL program.[25]

In addition to the grant and loan programs, the federal government subsidizes the wages paid to students by higher education institutions under the College Work-Study Program. During 1979-1980, more than 3,000 institutions of postsecondary education participated in the program, which provided part-time employment to almost 800,000 students, whose earnings ranged from $700 to $1,116.[26]

Some licensed practical nurse programs are supported under the federal Vocational Education program of grants to states. These matching grants are intended to assist states in conducting vocational education programs and to assure access to these programs. The grants are to be used for research, for support of innovative programs, for curriculum development, for guidance and counseling of students, and for administration of programs. In addition, funds can be used to provide part-time employment for students so that they can continue their training on a full-time basis. States are required to use 15 percent of the funds to support programs in postsecondary institutions. In 1979, it was estimated that this amounted to $191 million, of which approximately 90 percent went to community colleges.[27] Data are not available with which to determine the extent to which Vocational Education funds are supporting education programs for LPNs or AD nurses.

In general, the program statistics of federal student-aid programs do not identify students' field of study; thus, the extent to which all nursing students avail themselves of these sources cannot be determined without special studies. However, the fragmentary information available suggests that nursing students, at least in the early portions of their education, rely heavily on federal student aid programs.

The current administration, seeking to reduce the federal presence in higher education, has proposed cuts in the Pell Grant program and the elimination of supplemental SEOGs, NDSLs, and State Student Incentive Grants; it has also reduced subsidies to GSLs and increased limitations in eligibility for these loans. If enacted, such large reductions in federal student aid programs will reduce the number of students attending postsecondary education institutions generally and could be expected to have adverse effects on the numbers of students entering nursing education programs, especially in private institutions. Research on the demand for higher education has shown that individuals are responsive to the price of higher education, such that the proportion attending higher education decreases as the price increases (price is defined as the student's out-of-pocket cost, less financial aid). Low-income students respond more to price changes than do individuals from middle and upper income families.[28]

Education costs and the availability of financial aid also influence a student's choice among institutions and, presumably, education programs.[29]

*Nurse Training Act Programs* The Nurse Training Act (NTA) has provided loan funds to basic nursing students from its inception in 1964. Loans of up to $2,500 per year, or a total of $10,000, are made by participating nursing education programs to their students. Awards to participating programs are made on the basis of a formula, relative to the number of full-time students. In 1982 approximately 24,000 were loan recipients, down from almost 43,000 at the height of the program in 1973 (see Appendix 2).[30] It is not clear why the award level in 1982 and immediately prior years was not higher because a recent audit of a sample of recipient schools estimates that, nationwide, nursing schools hold a balance of $54 million that could have been used for loans to students.[31]

The nursing scholarship program, also administered by individual nursing education programs, made available scholarships of up to $2,000 per year to students with exceptional financial need. Funding of the program was discontinued after fiscal 1980. In 1981, almost 9,000 students received these scholarships (see Appendix 2); this was down from almost 35,000 students in 1973.[32] Total funds awarded under these NTA authorities to students in basic nursing education program, by type of programs, for the fiscal years 1965 through 1979 are shown in Table 26.

TABLE 26 Nurse Training Act Scholarship and Loan Funds Awarded to Basic Nursing Education Programs, by Type of Program, Fiscal Years 1965-1979

| | All Basic Programs | Baccalaureate Programs | Associate Degree Programs | Diploma Programs |
|---|---|---|---|---|
| Dollars (in millions) | | | | |
| TOTAL | $386.6 | $175.6 | $105.3 | $105.9 |
| Scholarships[a] | 126.5 | 57.6 | 39.5 | 30.4 |
| Loans | 259.30 | 118.0 | 65.8 | 75.5 |
| Percent Distribution | | | | |
| TOTAL | 100.0 | 45.4 | 27.2 | 27.4 |
| Scholarships | 100.0 | 45.5 | 31.2 | 24.3 |
| Loans | 100.0 | 45.5 | 25.4 | 29.1 |

[a] Fiscal years 1968-1979. No scholarship funds were authorized prior to 1968.

SOURCE: DHHS, HRA. *Trends in BHPr program statistics: Grants, awards, loans--FY 1957-79*, Tables 52 and 55, pp. 65 and 68 (see Reference 32 for complete citation).

Total appropriations under the loan and scholarships authorities from their inception through fiscal 1982 have been $511.3 million.

### Conclusion

Students considering a career in nursing face increasing education costs. These students tend to come from families of moderate incomes or to count heavily on their own resources to finance their education. They cannot expect substantial earnings in return for their education investments. These students appear to rely substantially on general federal financial aid programs. Proposed reductions in these programs, at the same time as reductions in NTA scholarship and loan programs, could reduce the number of students entering basic nursing education programs.

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### RECOMMENDATION 3

The federal government should maintain its general programs of financial aid to postsecondary students so that qualified prospective nursing students will continue to have the opportunity to enter generalist nursing education programs in numbers sufficient to maintain the necessary aggregate supply.

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## State and Institutional Decision Making

The future supply of nurses will be shaped not only by students' decisions to enter nursing education and their choices among the types of basic education programs, but also by the collective decisions of individual educational institutions with regard to the number, size, and type of nursing education programs they will offer. As this section will discuss, colleges and universities base their decisions on the availability of financial resources, the relative cost of nursing programs, and the demand for nursing education by students and for the products of that education by employers. In the foreseeable future, these decisions will be made in a circumstance of more constrained education resources than in the past.

### Financial Resources for Nursing Education

The educational institutions in which nursing education programs are based have varying sources of financing (Table 27). Publicly

TABLE 27 Current-Fund Revenues of Institutions of Higher Education, by Source, Fiscal Year 1980 (in thousands of dollars)

| | Publicly Controlled | | | | Privately Controlled | | | |
|---|---|---|---|---|---|---|---|---|
| Source of Revenue | All | Universities | Other 4-year Colleges | 2-year Colleges | All | Universities | Other 4-year Colleges | 2-year Colleges |
| All | $38,824,207<br>(100.0%) | $16,453,661<br>(100.0%) | $15,350,982<br>(100.0%) | $7,019,564<br>(100.0%) | $19,695,774<br>(100.0%) | $9,295,004<br>(100.0%) | $9,913,572<br>(100.0%) | $487,198<br>(100.0%) |
| Tuition and fees | 4,860,162<br>(12.5%) | 2,029,767<br>(12.3%) | 1,805,686<br>(11.8%) | 1,024,709<br>(14.6%) | 7,070,178<br>(35.9%) | 2,531,340<br>(27.2%) | 4,262,012<br>(43.0%) | 276,826<br>(56.8%) |
| State government appropriations | 17,390,352<br>(44.8%) | 6,588,799<br>(40.0%) | 7,319,733<br>(47.7%) | 3,481,819<br>(49.6%) | 221,242<br>(1.1%) | 88,748<br>(1.0%) | 126,379<br>(1.3%) | 6,116<br>(1.3%) |
| Local appropriations | 1,310,360<br>(3.4%) | 36,102<br>(0.2%) | 134,396<br>(0.9%) | 1,139,863<br>(16.2%) | 4,008<br>(0.0%) | 22<br>(0.0%) | 1,759<br>(0.0%) | 2,228<br>(0.5%) |
| Federal grants and contracts | 3,986,664<br>(10.3%) | 2,218,033<br>(13.5%) | 1,367,182<br>(8.9%) | 401,449<br>(5.7%) | 2,561,633<br>(13.0%) | 1,737,548<br>(18.7%) | 800,347<br>(8.1%) | 23,738<br>(4.9%) |
| State and local grants and contracts | 709,603<br>(1.8%) | 277,544<br>(1.7%) | 266,237<br>(1.7%) | 165,822<br>(2.4%) | 330,285<br>(1.7%) | 165,513<br>(1.8%) | 157,531<br>(1.6%) | 7,242<br>(1.5%) |
| Endowment income, private gifts and grants | 1,169,734<br>(3.0%) | 777,817<br>(4.7%) | 356,394<br>(2.3%) | 35,523<br>(0.5%) | 2,814,968<br>(14.3%) | 1,296,782<br>(14.0%) | 1,459,966<br>(14.7%) | 58,220<br>(11.9%) |
| Sales and services | 7,442,991<br>(19.2%) | 3,790,937<br>(23.0%) | 3,188,166<br>(20.8%) | 463,889<br>(6.6%) | 4,651,289<br>(23.6%) | 2,366,421<br>(25.5%) | 2,192,494<br>(22.1%) | 92,373<br>(19.0%) |
| Other sources | 1,954,340<br>(5.0%) | 734,661<br>(4.5%) | 913,188<br>(5.9%) | 306,491<br>(4.4%) | 2,042,171<br>(10.4%) | 1,108,629<br>(11.9%) | 913,084<br>(9.2%) | 20,457<br>(4.2%) |

SOURCE: Study analysis of unpublished data from Higher Education General Information Survey, 1979-1980, Financial Statistics of Higher Education, FY 1980, provided by the National Center for Education Statistics.

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supported 4-year colleges and universities, where half the nation's baccalaureate level programs and one-fourth of the AD programs are based, have state appropriations as their largest source. Public 2-year colleges receive half their funding from this source. Student tuition and fees represent about 12 percent of the revenues of public 4-year colleges and universities and about 15 percent of the revenues of public 2-year colleges. This revenue source includes financial aid; thus, not all of tuition and fees are actually paid by students and their families. Private institutions depend more heavily on tuition and fees, which represent 27 percent of revenues for universities and 43 percent for private 4-year colleges. Almost 60 percent of private 2-year college revenues are from this source. Private educational institutions also receive a substantial portion of their revenues from endowment income and private donors.

As related in Chapter I, approximately 80 percent of nursing education programs and enrolled nursing students are based in higher education institutions. In the aggregate, states represent the largest funding source for the nation's higher education system, contributing 30 percent of the current fund revenues of all colleges and universities combined in 1980.[33] State appropriations for higher education were estimated to be $19 billion that year.[34]*

In addition to state appropriations and tuition revenues, educational institutions have other funding sources, among them federal grants and contracts, which together represent the second largest funding source for United States higher education institutions (Table 27). The federal role in financing these institutions is greatest in the research area but also includes relatively small amounts under special programs, such as the NTA, that support education. Institutional support under the NTA has taken the form of formula or capitation grants (no longer authorized), special project grants, construction grants (no longer authorized), institutional grants for advanced nurse training, grants for nurse practitioner education, and research fellowships and grants (Chapter V). In 1980, appropriations for institutional support totaled $176.3 million; by 1982 they had declined to $84.3 million (Appendix 2).

The 300 diploma nursing education programs, representing approximately 20 percent of the total enrollment in basic nursing education, are based in hospitals rather than in higher education institutions. Funding for these programs comes primarily from hospitals' patient care revenues, 90 percent of which are third-party payments from private insurers and the government Medicare and Medicaid programs. The other two principal funding sources for diploma programs are student tuition and fees and federal institutional grants under NTA.

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*State appropriations include student aid as well as institutional support. A survey of states by the National Association of State Scholarship and Grants Programs indicated total student aid of $963 million in academic year 1981-1982.[35]

The Medicare program estimates that participating hospitals incurred approximately $350 million of "allowable nursing education costs" in 1979.[35] This figure, based on the amounts reported under "nursing education" on the Medicare cost report, can be assumed to represent expenses for diploma nursing programs. However, for a number of reasons, it should be viewed as a minimal estimate of nursing education costs in hospitals. First, all the costs associated with the education programs may not be included; administrative salaries, for example, may be reported under administrative costs rather than under nursing education. Second, the costs of clinical education are usually included in clinical department costs rather than in nursing education. Third, many hospitals jointly provide diploma programs with colleges; the college's portion of the costs ordinarily would not appear in the hospital's cost report. In addition, hospitals bear other education costs in addition to those related to formal diploma programs. They provide orientation and staff development programs to their employees, offer tuition reimbursement as a fringe benefit, and contract with colleges to provide educational opportunities for their employees. Very little is known about the extent of these forms of support for nursing education, which generally are not included in the nursing education cost center, and thus would not be included in the Health Care Financing Administration's $350 million estimate. Eighty-two percent of hospitals responding to a recent nursing personnel survey by the American Hospital Association reported that they provide tuition as a fringe benefit.[37]

As the largest funding source, state support of higher education is an important lever in influencing institutional resource allocation. Hospital decision makers also are heavily influenced by the availability of funding from third-party payers and the conditions placed upon payments from these sources. Thus, the future nurse supply is very much dependent on the flow of revenues from the major sources.

The financing outlook for higher education, including nursing, is for more constrained resources than in the past. Aggregate state higher education appropriations increased by about $2 billion between 1981 and 1982 and are expected to increase by about $1 billion in 1983.[38,39] However, in constant dollars, state support of higher education is predicted to remain level over the next few years.[40] In some states, fiscal stringencies can be expected to result in an absolute decline in higher education appropriations. Reductions already have occurred in some states.

Institutional support for nursing education under NTA has declined substantially since 1980, as noted above. Federal, state, and private concern for rising hospital costs may lead to restrictions on third-party payments to hospitals. Reimbursement for nursing education programs and other hospital-based education programs for physicians and allied health students could be reduced as a cost containment measure. The appropriateness of educational programs that are being supported by patient care dollars has been a matter of debate since the inception of the Medicare program in 1965.

Constraints on funding from state appropriations (and third-party payments, in the case of hospital education programs) create pressure on institutional decision makers to raise tuition levels in order to maintain the flow of funds to the institution. Proponents of greater economic efficiency in higher education argue that tuition generally should be set to cover a substantial portion of the cost of education, with financial aid serving to reduce inequities in educational opportunities among students from different income groups. At the institutional level, pressures to raise tuition are greatest for more expensive programs. In the interests of greater fiscal responsibility and accountability, institutional policy may be to charge differential tuition for different educational programs according to differences in their costs, rather than charging the same tuition to everyone. If differential tuition were to become more common than it is at present, nursing students would tend to face higher than average tuition levels, because nursing education programs tend to be more costly than the average because of relatively low student-faculty ratios required for clinical teaching.

In the current circumstance of constrained resources and economic recession, higher education institutions are finding it necessary to make difficult decisions as to the allocation of available funds. Nursing education programs compete with other programs in the same institution for the available resources and may in some cases be adversely affected. They may be pressed to maintain current class size at existing budget levels, reduce class size, discontinue programs, or cancel plans for program expansion.

The decision-making process that has as its ultimate outcome the amount of state and, in turn, institutional funds going to nursing education programs is complex, pluralistic, and differs from state to state. The process, given an overall level of funding for the institution, is influenced by a number of considerations:

- the relative cost of providing nursing education programs in comparison with the cost of other education programs
- demand by students for educational opportunities
- the need for specific kinds of manpower to meet demands by employers.

These considerations influence an institutional planning and budgeting process that also is subject to cross pressures created by educational policies not directly related to nursing, other institutional imperatives, the legacy of past decisions, and the interplay among the individuals involved in the process. Nonetheless, the considerations cited above are significant elements that enter the decision making of most universities and colleges in determining the resources allocated to nursing education.

Relative Costs of Nursing Education Programs

In looking for ways in which to deal with reduced resources, institutional decision makers usually turn their attention to high-cost programs. Nursing programs are widely perceived to be relatively high in cost, and this perception is borne out by the limited evidence available. At the University of Maryland, for example, the average cost per full-time equivalent (FTE) student in nursing has been estimated at approximately $3,900 in 1982; the average cost per FTE for all undergraduates is $2,150.[41] The Colorado Commission on Higher Education estimated that in 1976 the average annual cost for a FTE undergraduate in nursing was $1,739, compared with $1,175 for an FTE student in education.[42] Data from the community college system in Florida indicate that in the 1980-1981 academic year the cost per credit hour for students in nursing and allied health fields was $47.18, whereas the overall average cost was $23.59.[43] Of course, basic nursing education programs vary in their cost. Annual costs per student ranged from $952 to $3,549 for baccalaureate programs and from $855 to $2,871 for AD programs (direct costs only) in Indiana's state-supported institutions in 1978-1979.[44] Thus, there are high-cost and low-cost programs within nursing.

Why do costs vary so greatly? The reasons are many. As outlined by the study's advisory panel on nursing education cost and financing, they include:

- new versus old programs (accreditation, start-up costs for new programs)
- the proportion of part-time students (i.e., difficult to plan class enrollments, more advising and bookkeeping for part-time students)
- attrition rates (may be higher at schools attempting to achieve certain social values--e.g., inner-city schools)
- quality of programs (e.g., costs of establishing varied clinical experiences for small groups of students)
- program content and organization (the mix of lectures, laboratories, clinical preceptorships, etc.)
- the availability of revenues (i.e., if the program has money, it spends it)
- costs that are difficult to vary in the short run, e.g., faculty with fixed contracts (may cause unit costs to be high in programs with declining enrollment).

Such wide variations in costs are not unique to nursing; they are found in all higher education.* However, they point up the difficulties and pitfalls in looking at average costs of education, which carry little meaning. Costs should be viewed in light of unique program characteristics, types of students attracted, and work patterns of graduates.

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*For more detailed discussion, see S. Yoder, The institutional cost of nursing education. Background paper of the Study of Nursing and Nursing Education. Available from Publication-on-Demand Program, National Academy Press, Washington, D.C., 1983.

Student Demand State higher education systems are influenced by citizens' demand for educational opportunities. These demands may be evidenced in a number of ways. Rising applications and enrollments in existing education programs are perhaps the most visible, but these demands make themselves felt in other ways as well. Direct pressure on legislators by state taxpayers assuredly has been responsible for the growth of places in medical education in the past; this pressure can also make itself felt when a program is threatened by closure. Some nursing programs have avoided closure, at least for a time, by such efforts.

Demonstration of student demand for places in a nursing education program is an important element in the institutional bargaining process. It is difficult to maintain support for existing programs if entering classes are unfilled or if it is perceived that standards are being lowered to reach enrollment objectives. On the other hand, the case for increasing class size is easier to argue if many well-qualified applicants are denied admission for lack of places. At a time when enrollments from the traditional pool of high school graduates are diminishing, the need for nursing schools to look toward new potential "markets"--the nontraditional students discussed in Chapter IV--is heightened by the growing intra-institutional competition for constrained resources and students.

It should also be recognized, however, that student demand for nursing education is influenced by actions of employers with regard to the economic and noneconomic rewards they offer, by the profession, and by others. The pressure for diploma and AD nurses to complete a baccalaureate degree and the willingness of employers to provide tuition benefits is one example of how student demand is generated. On the basis of these developments, nursing educators have been able to make convincing arguments for establishing programs for RNs to complete the requirements for a baccalaureate degree.

Employer Demand Educational decision makers are responsive, to some extent, to the demands of employers in the state. In the past, for example, pleas by employers of nurses figured in the institution of support for diploma programs by the state of Illinois.[45] Engineering programs have grown enormously over the past few years as a consequence of employer demand. Particularly persuasive to educational institutions and policymakers is a willingness on the part of employers to bear a portion of the education costs by subsidizing tuition, by funding joint research projects, and even by paying faculty salaries, as has occurred in engineering. Rising salary offers to graduates also provide strong evidence of employer demands.

Systematic means to obtain accurate periodic readings of employer demands at the state and local levels do not exist. General perceptions of shortage or surplus reported in the media, statements by professional and industry associations, reports by health planning agencies, and informal employment feedback from recent graduates most often suffice as means of assessing market signals. The extent to which those signals are incorporated into the planning or budgeting process varies from case to case.

Educational planners are aware of the limitations of forecasting techniques; they have witnessed unpredicted dramatic shifts in the employment outlook for other occupations. Whether employer demand will play a larger role in educational decision making in the future will depend on how well those demands are articulated. Close affiliation between health care providers and educational institutions is perhaps one of the better ways of assuring proper feedback on the need not only for numbers, but also for types of nurses.

## Federal and State Influence on Institutional Decision Making

Because the federal government does not operate nursing schools, nor is it even the major source of financing, its influence on the nursing supply is limited to the monetary incentives it can offer universities and colleges and to the indirect effects of its employment policies in its programs of direct medical services. Whether educational institutions respond to such incentives depends, at least in part, on their ability to find other sources of financing (e.g., state appropriations, endowments, students, etc.) to maintain the increased educational capacity or to support the initiatives the federal program mandates.

Recent efforts have been made to determine the impact federal programs have had on institutional decisions to increase the supply of nurses of different types. Because institutional decision making is complex and federal input is indirect, it is very difficult to assess the federal influence on nursing education programs. A recent study funded by the DHHS concluded that between 1969 and 1979, federal funds expended under NTA caused an increase of approximately 33,000 to 42,000 graduations from basic programs over and above the numbers that would have occurred in the absence of their programs.[46] On the other hand, some researchers have found no significant effects.[47] Methodological differences among these studies may account for their conflicting findings, including different outcome measures, units of observation, and statistical methods. None of the studies was based on a model of both student and institutional decision making, the demand and supply components of the education market. Finally, as with any evaluation research, data limitations hamper efforts to measure certain key variables.

States are one level closer than the federal government to influencing the supply of nurses. Unlike the federal government, states provide the bulk of operational support for many basic nursing programs within senior colleges and universities as well as community colleges. State authorities also often exercise the power to approve new programs and to eliminate existing programs. Despite their powers, however, states usually do not interfere extensively or directly in the traditional prerogatives of educational institutions. Many states, however, attempt to control the rate of growth of higher education appropriations through coordinating boards, which attempt to guide institutional choices in the context of a master plan for the distribution of educational resources. Again, there is variability in the impact of these coordinating boards from state to state.[48]

## Conclusion

The future supply of generalist RNs--and their educational distribution by type of basic education--is significantly affected by the decisions educational institutions make with regard to the numbers, types, and sizes of nursing education programs offered. These decisions are based in large part on the general availability of resources for higher education and on the degree of success with which basic nursing programs compete for available funds.

Four major sources of financial support for basic nursing education have been identified. State tax dollars appropriated for higher education represent the largest source. Local governments, through their support of community colleges, represent a second major source. Hospitals provide support to nursing education by offering diploma programs in nursing and staff development programs, by providing educational fringe benefits to their nurse employees, and by subsidizing nurse employees who are advancing their level of education in college-based programs in return for service commitments. Costs incurred by hospitals are financed principally through third-party reimbursements. Finally, private donors provide a substantial portion of financing for programs in private educational institutions.

The amount of resources available for nursing education programs depends largely on how successfully they compete with other programs in the same institution. Institutional decision makers take into account the costs of all education programs as well as student demand for education and the demands of employers. Because basic nursing education is more costly than many education programs, student and employer demand are especially important.

Fiscal pressures on the educational budgets of state and local governments, as well as cost containment efforts aimed at hospitals, threaten to reduce funds available for nursing education from these sources.

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## RECOMMENDATION 4

Institutional and student financial support should be maintained by state and local governments, higher education institutions, hospitals, and third-party payers to assure that generalist nursing education programs have capacity and enrollments sufficient to graduate the numbers and kinds of nurses commensurate with state and local goals for the nurse supply.

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## CHAPTER IV

# Education for Generalist Positions in Nursing

The question of whether the aggregate supply of registered nurses (RNs) will be sufficient in the future to meet the changing demands of the nation's health care system was addressed in Chapter II. The committee concluded that the nation's hospitals and other major components of the health care system could expect an adequate supply of RNs to be available through 1990 in the aggregate, but we also noted aspects of nurse preparation about which failure to take appropriate actions could unfavorably influence the size and composition of the future supply. Chapter III dealt with one such major set of factors--the cost and financing of basic nurse education. In this chapter we turn to factors directly or indirectly influenced by nurse educators.

Many forces in society that affect the quantity and quality of candidates for nurse education are beyond the control of the educators. However, educators can take advantage of new societal trends that can increase the likelihood of beneficial forces prevailing over adverse ones. This chapter discusses ways in which such a positive impact could be made--by attracting new kinds of students to nursing, by lowering current barriers to educational advancement, and by closer collaboration between nursing education and nursing services.

### Attracting New Kinds of Students

During the 1980s, in common with almost every other type of postsecondary and vocational education, basic nurse education programs must adapt to a new environment occasioned by a declining United States birth rate that is shrinking the pool of high school graduates. Further, because nursing predominantly is a woman's occupation, education programs to prepare RNs must compete for gifted young high school graduates who currently are attracted to increasing opportunities for women in business, law, medicine, and engineering--all occupations in which students' investments in the costs of education yield a higher rate of return in salaries.

In these changed circumstances, the ability of nurse educators to attract sufficient numbers of high-quality students in the future may well depend on attracting greater numbers not only of new high school graduates to the established generic nurse education programs, but also of people in older age groups looking for a career change, and other nontraditional students for whom more flexible types of programs may be needed. Whether nursing educators can attract the required future supply depends in part on what hospitals and other major employers of nurses are able to offer in salaries, conditions of work, and opportunities for promotion, as is discussed in Chapter VII. However, it also depends on the ability of nurse education programs to meet the needs of new kinds of students and compete with the attractions of other career possibilities.

There were 2.6 million high school graduates in 1971. By 1985 graduations will have dropped to 2.4 million, although a higher proportion of the high school age group graduates than ever before.[1] Between 1975 and 1981 the total annual applications for fall admissions to the three basic nursing programs preparing for RN licensure declined by 43,000.[2] The number of fall admissions during this period, however, increased by over 1,500.[3] These phenomena translated to a decline in the ratio of fall applications to fall admissions from 3.19 in 1975 to 2.61 in 1981. There were only minor differences in ratios among the three types of programs preparing RNs in 1981, but baccalaureate programs ranked slightly lower. The same trend of declining ratios of applications to admissions is found in practical nurse programs.[4]

These facts appear to suggest an overall decline in the quality of students entering nursing programs, but appropriate data, such as the high school grade point average of entering students, are not available to test this hypothesis.

All education programs that prepare students for registered nurse licensure and for practical nurse licensure have unrealized potential for attracting nontraditional students. Although nurses' salaries are low in comparison with many professions, there are offsetting attractions. The practical nurse program or the associate degree (AD) programs offer opportunities for people who can afford only a 1- or 2-year investment in education. Nursing has had historically high employment rates--a particularly appealing attribute in the current economic recession. Nursing also offers opportunities for geographic mobility, part-time employment, and for people with family responsibilities, a choice of days and shifts to work. Finally, for those who enjoy working with and helping people, nursing offers especially appealing challenges.

There are several different kinds of potential nontraditional students to whom nurse educators can market their programs. One group consists of people with college or graduate education who wish to change careers. At a time when opportunities for teachers, social workers, and other service professionals are declining, nursing has attractions for such well educated and highly motivated people. Because substantial investments have already been made in their education, recruitment from this pool of potential candidates would appear to offer a relatively quick and cost effective way to enlarge the supply of RNs for generalist or subsequent advanced positions in the profession.

Women whose children reach school age and who wish to reenter the labor force in a stimulating career may also see advantages in nursing. Members of minority and immigrant groups, as in the past, may regard nursing as an occupation that offers prospects for upward social and educational advancement. Further, attracting more men to nursing could help greatly to enlarge the future supply.

Present capabilities for providing nursing education to these various kinds of nontraditional students are uneven. For example, people with baccalaureate or master's degrees in fields other than nursing encounter special hardships in attempts to switch careers into nursing. Besides the nursing course work and clinical experience, they sometimes must repeat non-nursing academic courses in order to obtain a requisite baccalureate degree in nursing. Some nurse education programs have been specially designed to meet the special educational needs of such advanced students, as at the School of Nursing at Yale University, Pace University, Case Western Reserve University, and the Health Sciences Schools of the Massachusetts General Hospital.

Although AD programs, based in community colleges, have for some years been attracting older students, diploma and baccalaureate programs have not yet concentrated their efforts on recruiting this group. In 1980 more than a third of newly licensed AD graduates were 30 years old or over, compared with hardly a tenth of either baccalaureate or diploma graduates.[5] Licensed practical nurse programs also attract older women. In 1980 almost 40 percent of the newly licensed practical nurses (LPNs) were 30 years old or older; only about 6 percent were under 20 years of age. This suggests that very few undertook their practical nursing education as part of or immediately following their high school course of studies.[6]

Only about 6 percent of newly graduated nurses are men; they are distributed fairly evenly among the three types of basic nurse education.[7] Specially designed efforts to attract them have been few. Practical nurse programs graduate an even smaller proportion of men.

In 1981, blacks made up 6 percent, Hispanics 2 percent, and American Indians and Orientals combined less than 2 percent of newly graduated nurses. A slightly higher proportion of blacks graduated from AD programs than from baccalaureate programs; diploma programs had the lowest percent. Differences for other minority groups were minimal.[8] In recent years, practical nurse programs have graduated a larger proportion of blacks, about 12 percent in 1981.[9]

The committee found many examples of attempts to attract new types of students, but data on success or failure of any of these methods are not yet being systematically collected, nor are many resources available for those interested in investigating or implementing new techniques to bring nontraditional students into the mainstream of education.

## Conclusion

Actions taken by nursing educators, professional associations, the hospital industry, and other employers can affect both the number and the types of applicants to their programs. Because applications and admissions to basic nurse education programs of recent high school graduates have declined and are likely to continue downward, administrators and faculty must attract recruits from other groups in order to maintain their volume of enrollments and graduations. A number of groups have been identified as being particularly likely to respond to efforts made to facilitate their entry into nursing. They include individuals making career changes, mature women first entering the labor market, and minorities.

Attracting these people to nursing education programs and providing support to retain them in programs, such as special counseling and curriculum adjustments, entail certain costs. Nevertheless, many educational institutions may find that their long-run economic viability will depend on maintaining enrollments at a high enough level to generate sufficient income. Those involved in planning for individual educational institutions should carefully consider whether their programs would benefit from this type of investment. Failure to adapt to demographic realities and to take advantage of societal changes will lead to higher unit costs of nursing education resulting from unfilled places in education programs.

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RECOMMENDATION 5

> To assure a sufficient continuing supply of new applicants, nurse educators and national nursing organizations should adopt recruitment strategies that attract not only recent high school graduates but also nontraditional prospective students, such as those seeking late entry into a profession or seeking to change careers, and minorities.

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## Opportunities for Educational Advancement

Many RNs and LPNs seek further education to improve their knowledge and skills and to enhance their chances of career promotion. Although additional nursing education of such people does not augment the overall numbers in the nursing supply, it alters the mix of the supply toward Bachelor of Science in Nursing (BSN) degree, a goal that is espoused by many leaders in the profession. If diploma and AD graduates advance to the BSN degree level, they, together with graduates from the generic 4-year BSN programs, enlarge the pool of registered nurses (RNs) from which graduate nurse education programs can subsequently draw.

By the time nurses become licensed, substantial investments in their basic education have already been made. If appropriate academic credits are transferred and clinical skills are recognized, the costs to the student of obtaining a baccalaureate degree are minimized. To the extent that hospitals and other employers contribute tuition for

RN and LPN employees as fringe benefits, and to the extent that students pay many other costs of their education, the burden on state and local governments may be correspondingly reduced, leaving nursing programs in public colleges and universities more resources to expand their master's and doctoral programs and to support nursing research. Thus, encouraging educational advancement allows licensed nurses to capitalize on academic and clinical expertise already acquired and appears to be a cost effective way of upgrading the skills and knowledge of a portion of the existing supply of nurses. On the other hand, the costs to programs of nurse education associated with accepting transfer or advanced placement students may be somewhat higher, not only because of increased administrative paperwork, but also for the development of challenge examinations.*

Although there are clear advantages to facilitating the upward movement through the profession for various levels of nursing personnel, numerous barriers to such progress exist, and lowering those barriers is not always easy. Educational advancement creates problems for students, for nurse educators, and for accreditation bodies.

Barriers to advancement often stem from the admission and transfer policies of individual academic institutions. Candidates also can be handicapped by lack of explicit goals of educational attainment in the various required areas of nursing knowledge and by the lack of standard performance to measure various types and levels of clinical and judgmental skills acquired in practice (Chapter VIII). Perhaps as a result, problems have been identified with accreditation criteria and processes that can result in repetitious courses and clinical instruction that many registered nurse students find wasteful of their time and money. For highly experienced nurses, duplicative teaching in the clinical area can be frustrating, especially if the faculty who teach them have not kept abreast with changing practices. Because of these barriers, some RNs elect to obtain higher degrees in another field.

In 1981, referring to admission criteria for master's programs in nursing, the executive director of the American Association of Colleges of Nursing stated that it is logical to require that the applicant have a bachelor's in nursing or an equivalent that has been validated. She observed:

> A major contrast between the early practice and recent years is that the former's emphasis was how to assist able applicants to get in, while currently the criterion seems to be looked upon as a barrier to keep them out . . . if we want to increase our numbers and not reject a

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*Challenge examinations are designed to allow students who have taken a given course at one institution without academic credit to obtain credit for it at another, after demonstrating their mastery of the subject matter. Candidates for such examinations are usually given reading lists of the course to study before the examination.

> lot of worthy applicants, we should stop treating the RN who has a bachelor's in another field like a leper. No matter that the registered nurse applicant may have graduated with honors in another major and had achieved well on admission tests. Too often, the question; What can I do to make it up" is answered by the suggestion to enroll for at least the senior year in an accredited generic nursing program. Very few adults can afford to do that.[10]

Nursing educators face problems in trying to develop workable systems for accepting graduates of other basic nursing education programs into their own programs, because although there are broad guidelines, nurse education has few standard components of a kind that can facilitate direct transfer of credits. Nor do accrediting agencies have the benefit of systematic comparative analysis of the curricula currently offered in the three basic RN programs. Nursing studies in several states and testimony from nursing organizations say that the lack of clearly differentiated and measurable knowledge and performance expectations at the conclusion of diploma, associate degree, and baccalaureate nurse education handicaps schools in designing programs for professional advancement and creates confusion among their students as they try to select programs appropriate to their career goals.

The importance and complexity of addressing problems of educational advancement of RNs from diploma and AD programs to baccalaureate programs have been widely recognized by state education authorities and by state and national nursing organizations. Both the American Nurses' Association and the National League for Nursing have endorsed the principle of educational advancement.[11,12] Also, the American Hospital Association (AHA) 1982 position statement on nursing education states that "a baccalaureate degree should be an attainable goal for each student practicing nurse in or from an associate or diploma program, and provisions must be made for crediting their courses and experience toward the baccalaureate degree."[13] On a practical level, a recent AHA survey reports that the majority of hospitals now offer to contribute to their nurses' tuition as a fringe benefit.

State studies of nursing in almost half the states have recognized the importance of designing nurse education programs to encourage the progression of qualified students through the various levels of nurse education in a manner that minimizes duplication of program and student efforts and costs. To this end, some states have taken follow-up actions to improve coordination among nursing education programs, as will be discussed shortly.

### Efforts by Individual Nurses

Notwithstanding barriers to educational advancement, it is clear that nurses at many levels are making efforts to improve their professional status, reflecting in part pressures from employers who today often demand higher academic qualifications, and possibly also a more general desire for greater responsibility in the workplace.

Substantial numbers of nurses have pursued higher levels of education and continue to do so. Among the total 364,000 RNs with baccalaureate or higher degrees in 1980, 28 percent had initially prepared for licensure in a diploma program and another 7 percent in an AD program (Figure 12). Analysis of the subset of RNs that had earned graduate degrees reveals that in 1980, of the 68,000 RNs with master's or doctoral degrees, more than one-half had had their initial nurse education in either a diploma or an AD program (Figure 13).

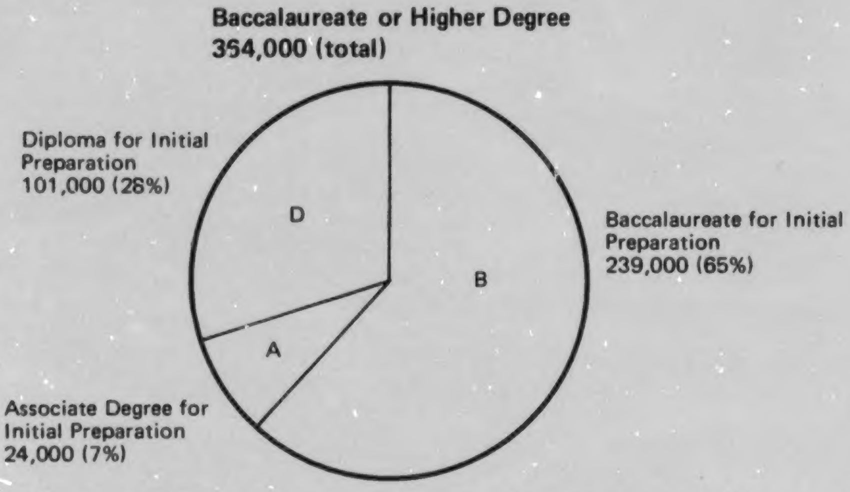

FIGURE 12 Contribution of educational mobility to the 1980 pool of employed RNs with baccalaureate or higher degrees.

Enrollments of RN students in baccalaureate nursing programs increased from less than 10,000 in 1972 to more than 33,000 in 1980. The majority (58 percent) of such students were enrolled on a part-time basis.[14] All told in 1980 almost a third of the graduations from BSN programs were of students who already were RNs.[15]

Practical nurses are also upwardly mobile. In 1978, about 7 percent of all graduates from basic RN programs, almost 5,000 individuals, had entered as LPNs. Associate degree programs had the highest proportion of such students--more than 12 percent.[16]

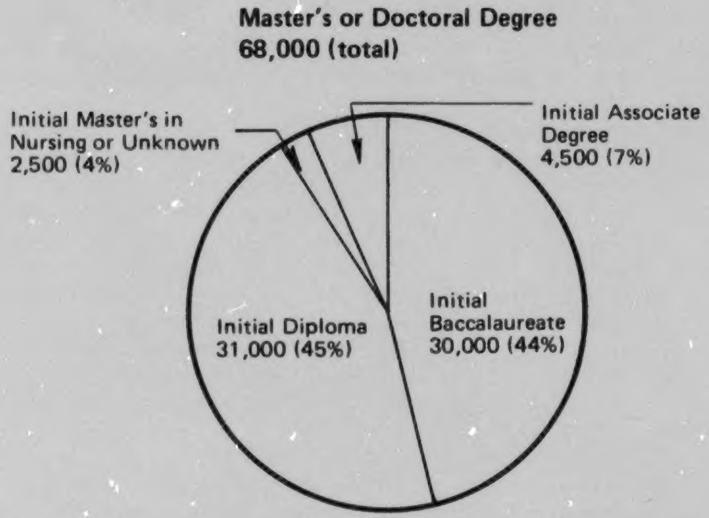

FIGURE 13 Contribution of educational mobility to the 1980 pool of employed RNs with master's and doctoral degrees.

## Efforts by Nurse Educators

Nursing education is making serious efforts to reduce barriers to educational advancement. Many institutions have adjusted their schedules and requirements to encourage efficient progression through the various levels of nursing education. In 1981, 388 programs offered the baccalaureate in nursing; 351 of those programs enrolled RNs who had obtained their initial preparation in diploma and associate degree programs.[17] In addition, 123 other baccalaureate programs were designed specifically for such RN students; 55 percent of the RN enrollments were in NLN accredited programs.[18]

Institutions that want to encourage educational advancement among RNs should facilitate the transfer of academic credits, offer challenge exams to minimize duplicative course requirements, and give credit in recognition of the students' clinical expertise. One example of a program developed to facilitate educational advancement is in Orange County, California. Here, vocational schools, community colleges, a 4-year college, and a university developed an articulated program wherein successful students can progress from a certified nurse aide program to a master's degree in a clinical specialty without loss of academic credit and without repeating course work. The program has operated successfully for more than 6 years.

Another particularly innovative program is the New York External Degree program in Nursing, developed for use nationwide by the University of the State of New York under a series of W. K. Kellogg Foundation grants. Registered nurses, practical nurses, and non-nurses meet the program's formal requirements by building on their past academic achievements and clinical experience. They can acquire any necessary additional academic credits and/or clinical instruction in academic institutions and in-patient care settings of their choice, in their own communities. When they have completed the requirements, students take standardized external degree program examinations. These include rigorous performance evaluation of their clinical skills in test site hospitals located in New York and California. (Sites in other states are planned.) Forty-five states accredit the program to allow its graduates to take their state licensure examination. As of June 1982, 2,734 students were enrolled in the program leading to the BSN and 3,016 were enrolled in the program leading to an associate in science or an associate in applied science. By June 1982, 352 graduates had earned the BSN and 1,419 had earned the associate degree. The acceptance of the external degree by graduate schools has yet to be tested.

## Efforts by States

Many states have educational advancement as a high priority, viewing it as a relatively low-cost way of upgrading the nurse supply that serves the needs of students, educators, and nurse employers. For example, legislation in Arkansas mandates advanced placement options for RNs and LPNs in state supported schools. The goal with respect to LPNs is to produce more RNs within a shorter time period. By 1980-1981, mechanisms had been developed for RNs, LPNs, and licensed "psychiatric technician" nurses to take challenge examinations or transfer credits toward a degree. In California, curriculum articulation (systematic organization of courses among schools to facilitate student transfers) has received considerable legislative attention: (1) the RN Practice Act (since 1976) requires that an RN program must be prepared to graduate a licensed vocational nurse (LVN) from its RN program with no more than 30 additional credits; (2) California's Business and Professions Code requires all LVN programs to grant credit for prior knowledge; failure to do so may cause the Board of Vocational Nurse Examiners to deny accreditation.

There are many other examples of state activity. Several state boards of nurse licensure have appointed articulation subcommittees, such as that appointed by the Kansas State Board of Nursing in 1977, which recommended that "formal articulation" be established on a statewide basis among all nursing education programs. In 1982, state boards of nursing in 34 states had approved nurse education programs in which LPNs can become eligible to take the standard examination for RN licensure.

Analyses and recommendations in many state nursing studies focus on educational advancement. For example, the Indiana Commission on Higher Education's report in 1981 recommended that the General Assembly provide support and incentives to facilitate movement from LPN through MSN, using demonstration projects, nontraditional study programs (such as the external degree), and tuition credit based on years of work. Candidates can receive credit for courses offered through a telecommunications network that reaches students at their place of work in hospitals and other sites. The report's long-term priorities included expanded baccalaureate completion programs for RNs and master's programs located throughout the state.

## Conclusion

Although pursuit of higher education by large numbers of nurses already licensed will not necessarily augment the overall numbers in practice, over time it can change the characteristics of the supply and enhance individual opportunities for career advancement as well as provide candidates for employment in categories that employers may find in short supply. Substantial numbers of LPNs could advance to become RNs. Advancing diploma and associate degree RNs to the baccalaureate level not only produces a more educated group; it also enlarges the pool from which graduate nursing education can draw. Educational progression from less than a baccalaureate degree has been characteristic of the careers of many nurses who now hold graduate degrees.

In 1980, about 50,000 RNs were enrolled in some form of education program intended to advance their academic credentials. Many more were pursuing shorter-term training to obtain special skills leading to certificates or to keep existing knowledge and skills current in continuing education workshops and seminars. Although many educational programs have responded to the need of nurses for educational advancement by facilitating credit transfers, many others do not yet actively encourage this objective. Upward advancement for both LPNs and RNs has been hindered by failure of some institutions to plan their programs on the premise that successive stages of nursing education should be articulated so that the course credits students have already obtained and the experience they have acquired can contribute maximally toward admission and progression to the next stage.

Motivation is increasing for RNs and LPNs to pursue further education. Pressures on the individual come, in part, from the growing complexity and variety of nursing responsibilities, and in part from anticipation that future promotional opportunities or career mobility may rest on qualifications that differentiate nurses by academic credentials. Attainment of future supply goals may depend in large part on a continual upgrading of the quality of a pool of nurses that is primarily nourished by streams of new entrants whose initial career objective may be to ensure nursing employment at minimum personal cost.

Educational institutions inevitably will incur some added costs for steps taken to ease students' transitions from one educational program to another. They will have to implement systems for evaluating students' credentials, design curricula sufficiently flexible to absorb students from other schools and programs, and offer such students special counseling--all of which create additional administrative burdens. On the other hand, where experienced nurses successfully challenge clinical requirements, educational institutions may benefit from proportionately fewer enrollments in the more expensive clinical components of their nurse educational programs.

Employers of nurses make substantial contributions to education in the form of tuition reimbursement as a fringe benefit. Because of this financial investment, it is in the interest of hospitals to participate actively in cooperative efforts with educational institutions to facilitate educational mobility.

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RECOMMENDATION 6

> Licensed nurses at all levels who wish to upgrade their education so as to enhance career opportunities should not encounter unwarranted barriers to admission. State education agencies, nursing education programs, and employers of nurses should assume a shared responsibility for developing policies and programs to minimize loss of time and money by students moving from one nursing education program level to another.

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## Collaboration Between Education and Service

Estimating the future need for RNs with various educational backgrounds, as required by the congressional charge, is complicated by differing perceptions of educators and employers about the appropriate base of knowledge and skills new graduates need. These differences began to be apparent when nursing education moved away from its historical base in hospitals in response to abuses and inadequacies that were believed to characterize the apprentice type of training they provided. They continue to plague the profession. Many nursing service administrators believe that academic nurse educators, removed from the realities of the employment setting, are preparing students to function in ideal environments that rarely exist in the real and extremely diverse worlds of work. In turn, many nurse educators believe that nursing service administrators fail to provide work environments conducive to the kinds of nursing practice their graduates--particularly baccalaureate RNs--are equipped to conduct and that, furthermore, new graduates of baccalaureate, AD, and diploma programs should be differentiated in their functional work assignments. The report of a task force of the American Association of Colleges of Nursing* observes that ". . . conflicting philosophies, values, and priorities between nurse educators and nursing services administrators have generally served to deter a mutual understanding and acceptance of responsibility for quality patient care."[19]

Concerns about communication and collaboration between nursing education and nursing service were brought to the committee's attention not only from the literature but also from state nursing studies, from testimony, from reports of many individual nurse educators, nurse administrators, and hospital administrators interviewed during the course of site visits, and from personal communications.

One complaint frequently voiced by hospital nursing service administrators is that newly licensed nurses often lack basic clinical skills. This requires extra expenses for orientation and staff development that ultimately must be met through the patient care payment systems. Further, some public hospitals report that newly graduated nurses seek initial employment with them for a year's intensive training but that after staff development programs and senior nurse supervison have turned these novices into fully functioning staff nurses, they move on to better paying jobs in voluntary hospitals.[20] This means that a large share of the scarce tax dollars these institutions invest in the orientation process are lost to them.

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*The American Association of Colleges of Nursing is a membership organization of 230 deans and directors of schools of nursing that offer approved baccalaureate and graduate programs in nursing.

Nurse educators note that the phenomenon is not unique to nursing. All new professionals, including lawyers, engineers, physicians, and architects, need extensive periods of orientation, regardless of the length of their educational preparations. Employers routinely accept that substantial investment in on-the-job training is part of the cost of doing business.*

Nursing leaders on both sides of this issue have become sensitized to these concerns and appear to be looking for positive ways to arrive at mutually derived expectations of how best to relate nursing education to nursing practice and to agree on cost effective education and practice actions to realize such expectations. Many approaches are being tried. These are reviewed in the background paper by Aydelotte, "Approaches to Conjoining Nursing Education and Practice," prepared on the basis of comments from the study's advisory committee on nursing education and nursing practice and other nursing leaders.

Some examples of approaches designed to enhance collaboration between nurse educators and nurses in practice settings are described below. Goals include the provision of organizational structures that foster common perspectives; engagement in additional clinical experiences for nursing students; maintenance of the clinical skills of academic nursing faculty; and facilitation of a smooth transition from student to practicing nurse.

Unification of Nursing Education and Nursing Service Schools of nursing and service settings at a number of medical centers (including the University of Florida, Rush-Presbyterian-St. Luke's Medical Center in Chicago, the University of Rochester Medical Center in New York, and the University Hospitals of Cleveland and Case Western Reserve University in Ohio) have been pioneers in unifying nursing practice and nursing education.[21] Nursing education and service programs that follow these leads use joint nurse faculty/nursing service appointments and other mechanisms designed to provide teaching and research environments where nursing theory and clinical practice can enrich each other for the mutual benefit of students, faculty, and patients. In such settings, the objective is to encourage common professional interests and thereby promote close communication and shared values. However, successful implementation of the unification model may be difficult in some settings and unrealistic in others. A major question is the prime loyalty of the nursing dean/nursing services director: to whom is this person primarily accountable, and for what? There also are questions of who decides tenure, promotion, and salaries--and from whose budget they are paid. Staff may become overstressed if loads and sequence of teaching and service activities are not carefully planned and monitored.*

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*The contention of nurse educators that on-the-job experience, with or without formal instruction, is needed by graduates of any type of professional school is incontestable. However, nursing service administrators point out that many professional schools plan and provide such experience for their students. In medical schools, such experience is incorporated into the formal education process through clinical clerkships. Students of optometry and dentistry usually gain clinical experience by working in school-operated clinics in community settings. Law students are often encouraged to work in law firms during their summer vacations. Many nursing students, too, work as aides in hospitals during their vacations and during the school year.

Joint Planning of Nurse Orientation Curricula Various demonstrations sponsored by the Southern Regional Education Board's Nursing Curriculum Project have brought nurse education and nursing service principals together to improve the new nurses' orientation to practice. One example is at St. Petersburg, Florida. There, faculty from the Clearwater campus of the St. Petersburg Junior College Nursing Program and representatives from eight community health careagencies (hospitals and others) worked jointly to develop elements of an orientation plan for newly graduated nurses. The plan has a core component that this group deemed necessary for all employers. To this, each individual institution can add its module--setting forth its own institution's policies and detailed procedures. Participants in the development process appear to have gained important new insights into each others' goals and missions.[22]

Clinical Experience for Nursing Practice Even where communication between nursing services and nursing education is not formalized in an organizational structure, hospitals and nurse education programs alike appear to recognize the necessity for well-planned clinical experience, nurse externships and internships, and other means of smoothing the transition of new RNs from education to practice.

Nursing service administrators believe that new graduates adjust to professional responsibilities more easily if as students they have acquired experience with groups of patients, rather than only with individuals. They also hold that student experience on night and evening shifts and on weekends is an important part of preparation for the realities of nursing practice. Some nursing service administrators report that nursing students who finance their education in part by working as aides in patient care settings often make the most successful transition to nursing after they graduate. However, in individual situations, there often is no clear agreement between nurse educators and service administrators on the division of responsibility for the student's clinical supervision and guidance, or for the synchronizing of clinical experience with instruction in nursing theory and science.

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*For detailed discussion, see M. Aydelotte. Approaches to conjoining nursing education and practice. Background paper of the Institute of Medicine Study of Nursing and Nursing Education. Available from Publication-on-Demand Program, National Academy Press, Washington, D.C., 1983.

Although nurse educators and nurse employers appear increasingly to agree that graduates should be able to function effectively in today's clinical settings and should be employed in ways that make effective use of their abilities, attempts to achieve this goal meet a number of difficulties. For example, academic nurse education programs often find it difficult to provide students with a proper balance of classroom and clinical instructional experiences.

Wilson observes that nurse educators in academic programs often face difficulties gaining access to appropriate facilities for their clinical teaching. Because their programs are not formally a part of an agency providing patient care, these educators must develop affiliations and obtain agreements with hospitals, visiting nurse services, and other provider organizations to allow arrangements to be made for their students to receive clinical experience with patients. Such hospitals and other health care agencies often have affiliations with several different nursing education programs, most of which want to schedule their students' clinical experience on weekdays, between 7:00 a.m. and 3:30 p.m. Thus, students may receive extremely light patient assignments--a situation they will not experience once they graduate. Further, on the day of scheduled clinical experience, the clinical setting may be unable to provide the specific types of patients that meet the needs of the students' educational program.[23]

Wilson makes several other observations. Nursing homes are not routinely used as teaching sites because educators believe that the quality of nursing care provided there does not usually meet the kinds of nursing standards to which their students should be exposed, or that the experience they receive in such homes is not sufficient to meet course goals. Also, because academic institutions usually reward their faculty for scholarship (published research) more than for their clinical skills in nursing practice, which are difficult to measure, there are few incentives for nurse faculty to maintain active clinical practice. However, some hospitals are now beginning to impose conditions in their affiliation contracts to include demonstration of the clinical competencies of the faculty who will be supervising students. This may encourage faculty members to keep their practice skills up to date.

For their part, employers observe that all newly graduated RNs require the same initial orientation regardless of the type of basic education programs they attended and must be able to demonstrate a common level of basic skills before assuming full responsibilities for patient care. Therefore, it is argued, there is no basis for differentiating their initial staff assignments. Although nursing service administrators may take the type of initial educational preparation into account in recommending subsequent promotions, they report that criteria of individual demonstrated performance weigh more heavily.[24] These situations illustrate some of the differences in priorities between educators and nurse employers.

## Conclusion

Inadequate collaboration between nurse educators and employers has resulted in dissatisfaction among both groups. Employers feel that many newly licensed nurses are unprepared to assume the responsibilities of clinical nursing, and some nurse educators believe that employers are unprepared to make optimum use of the knowledge and skills that their graduates--especially those with baccalaureate preparation--bring to the job. However, there is increasing concern in nursing to identify ways of reducing this discord. Collaborative arrangements of various kinds have successfully brought together educators and employers of nurses for their mutual benefit and for improved patient care.

The development of practical arrangements for improving communication and collaboration between nursing educators and nursing service administrators requires the solution of a great many logistical, organizational, and financial problems among a large variety of institutions that do not today have close affiliations. These tasks are sufficiently difficult and time consuming as to require special funding and staff to provide an incentive to test untried relationships and to develop new patterns of accountability. Further experimentation and demonstration are needed to guide institutions of all types in moving toward mutually designed goals.

The Nurse Training Act Special Project Grants--authorized at the $15 million level between 1977 and 1980--formerly included among its many purposes the funding of cooperative arrangements among hospitals and academic institutions. This authority was repealed in the Budget Reconciliation Act of 1981. Financial assistance should be offered to demonstrate innovative ways of implementing collaborative arrangements, including those that emphasize faculty clinical and research appointments. Although the financial burden of developing new collaborative arrangements should fall primarily on those to whom benefits will accrue, the availability of small federal grants to support additional administrative personnel to devote their efforts to developing and implementing necessary new program linkages would hasten the advent of effective collaboration. Reinstituting even a small amount of federal support would help draw attention to the magnitude of the problem and provide impetus for wider experimentation. It is crucial to demonstrate under widely varying conditions how reconciliation of differences between the goals and expectations of leaders in nursing practice and in education can improve both the education of students and the care of patients.

RECOMMENDATION 7

> Closer collaboration between nurse educators and nurses who provide patient services is essential to give students an appropriate balance of academic and clinical practice perspectives and skills during their educational preparation. The federal government should offer grants to nursing education programs that, in association with the nursing services of hospitals and other health care providers, undertake to develop and implement collaborative educational, clinical, and/or research programs.

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# CHAPTER V

# Education for Advanced Positions in Nursing

The previous chapter described measures for strengthening the nursing supply by enlarging the pool from which registered nurse education programs draw students, reducing the barriers to educational advancement, and improving the collaboration between nursing education and nursing services. There is, however, another important dimension to the problem of assuring adequate nursing services in the nation's health care system.

Integral to the effectiveness of the nursing supply are such matters as the quality of the education, the management of nursing personnel and nursing services, the study of nursing practice for ways to improve it, and the ability of nursing's advanced practitioners to generate new knowledge and to translate it both into improved patient care and into the education of other nurses. These leadership functions are closely associated with the advanced education of nurses.

In this chapter, we examine the supply and demand for nurses with advanced education in three areas: nursing administration, education (including both research and teaching), and clinical specialty practice.

## Advanced Education for Nursing Administration

The committee found a widespread conviction among administrators of hospitals and long-term care facilities that their nurse administrator colleagues could make the delivery of care more cost effective if they had better grounding in financial management and in the human resource management required at all the levels of administration in which they currently serve, i.e., from head nurse positions through nursing service administrators.* Reciprocally, testimony indicated that nurse administrators should be able to contribute to executive management decisions beyond nursing services. Because they are familiar with almost all aspects of the daily operations of their institutions through the interactions between their own and other departments, they are in a unique position to participate in institution-wide decisions on ways to contain costs while maintaining good standards of patient care.

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*In a number of medical centers, nursing service directors are now at the vice-presidency level.

Hospitals and other providers of health services need departmental managers adept in the complex techniques of modern administration. Today, administrators must deal with intricate problems in employment policies, job design, resource allocation, intra-institutional negotiation, and financial management. Many of the skills needed to handle these problems can be acquired or enhanced through academic preparation. Nursing service administrators should be equipped with the same fundamental knowledge of management practices as their colleagues in other departments. Every departmental administrator will be competing strongly for a share of revenue generated as cost cutting proceeds further. Special seminars and workshops sponsored by professional organizations and short training courses have often had to suffice as a means of upgrading middle managers and top administrators in nursing services. Although these programs help, they are not sufficient to prepare individuals for the responsibilities of high-level administrative positions.

Among the more than 61,000 registered nurses (RNs) who reported in the National Sample Survey of Registered Nurses, November 1980, that they occupied a position in "top nursing administration," only 18 percent held a master's degree and 1.4 percent held a doctorate.[1] However, it should be noted that this category did not distinguish between persons who worked as administrators in large complex health care settings with responsibilities for hundreds of staff and multimillion dollar budgets and those who worked in small hospitals, nursing homes, student health services, or physicians' offices and were responsible for only a handful of staff and a small budget. It is known that nursing service administrators with diploma preparation are concentrated in hospitals with fewer than 100 beds; nursing service administrators with associate degree (AD) preparation are concentrated in hospitals with fewer than 200 beds. Nursing service administrators with baccalaureate preparation are largely found in hospitals of up to 300 beds; and, as could be expected, those with master's degrees and doctorates are in the larger hospitals.[2]

Finally, it should be noted that the administrator category also included 5,000 deans and directors of nursing education, the majority of whom probably held a master's or doctoral degree. If this group was removed from the computation of the proportion of individuals in "top nursing administration" with advanced degrees, the proportion of all "top nursing administrators" holding master's or doctoral degrees might be appreciably less.

Although the committee would not argue that the majority of nurses who work in supervisory or administrative positions need the skills and knowledge acquired in formal graduate degree programs, there is general agreement that a scarcity exists of nurses with advanced education. The scarcity is felt most in larger hospitals. As health care settings become increasingly complex, more highly skilled administrators of nursing services will be needed.

Because advanced clinical preparation has been the prime focus of attention within the last 20 years, graduate programs in schools of nursing have not been able to make a substantial direct contribution to the pool of top nursing service administrators and nurses in middle management positions. Students do not appear to be attracted. Between 1971 and 1980 only about 7 percent of all graduates of master's programs in nursing had a concentration in administration. It seems unlikely that graduate programs in administration in schools of nursing can produce larger numbers and better quality of trainees soon. One observer comments:

> While programs in health care administration have grown and changed, strengthening their residency in line with needs of the field, nursing has come to a fixed core, heavy on theory and light on the type of experience a residency could provide. Too often a major in administration and nursing has not equipped that graduate with the skills or language common to health care administration. It is not uncommon for the new graduate to immediately enroll for evening courses in business administration.[3]

The W.K. Kellogg Foundation has in recent years funded several demonstrations of interdisciplinary preparation for nursing service administration in university health care settings to assist nursing schools to develop joint programs with schools of health administration, management, or business. The most recent example is that of the University of Pennsylvania School of Nursing and the Wharton Graduate School of Business. The study committee noted that there are still too few opportunities for graduate nursing education in management through such collaborative programs. We believe it is in the public interest that the health care industry and nursing education encourage and sponsor more such endeavors. Collaborative arrangements with health services administration programs and/or with business schools can, over the long run, build up nursing education's capabilities for providing high-quality preparation for this very important aspect of nursing leadership. Advanced education in management is one of the few areas with substantial financial payoff for students, because nursing service administrators in large institutions command the highest salaries in nursing. This suggests that the financing of such training be a cooperative endeavor in which greater weight is given than in other fields of graduate education to the motivations for institutions and individual nurses to share in costs.

## Advanced Education for Teaching and Research

Many professional schools and university departments have little difficulty in attracting faculty members in the numbers and at levels of excellence required. This is not the case in schools and departments of nursing, many of which were established in colleges and universities as recently as the late 1960s and 1970s. The relative dearth of academic credentials among nursing faculty has been aggravated by a great increase in the numbers of nursing education programs in institutions of higher education and the consequent rapid and large increase in nursing students. From 1968 to 1980 the number of full-time faculty in nursing education programs increased by 36 percent and enrollments (basic and graduate) increased by 66 percent.[4] State boards of nursing are increasingly requiring that the deans and faculty of nursing education schools hold graduate degrees. As of June 1982, 19 states required master of science degrees in nursing as the minimal degree for senior faculty in all programs, and two states required directors of schools of nursing to hold a doctoral degree.[5] If one agrees that the faculty required to teach master's and doctoral students should hold doctoral degrees and that those who teach baccalaureate students should also possess advanced degrees, indications of scarcity are suggested by the fact that of the approximately 20,000 full-time nursing faculty in 1980, only 7 percent held a doctoral degree; 68 percent had a master's degree.

The proportion of nursing faculty with doctorates does not compare favorably with other disciplines. According to the Association of Schools of Public Health, well over one-half of the faculty employed by 20 schools of public health held at least one doctorate. Compared with science faculties, nurses showed up even more unfavorably. A National Science Foundation study of young and senior science and engineering faculty found that in schools offering doctoral as well as other degrees in departments of psychology, physical sciences, biological sciences, mathematical/computer sciences, engineering, and social sciences, more than 90 percent held the doctoral degree.[6] By comparison, in the 22 nursing schools which enrolled nursing doctoral students in 1981-1982, an average of only 35 percent of the faculty had doctoral preparation.[7]

Recent surveys in 40 states in the midwestern, western, and southern regions found that among the 58 graduate programs in nursing surveyed, respondents projected a need for 1,080 doctorally prepared nurse faculty during the following 5 years. (Data were not obtained on what proportion of such new faculty positions had been approved by their respective institutions and assured of funding.) The schools reported that their greatest need was for 371 nurse faculty with doctoral preparation emphasizing research and theory development in nursing. The second highest need was for 359 doctoral nurses with formal preparation in clinical practice.[8] To put this in the perspective of the supply, in 1980 there were only about 4,000 doctorally prepared nurses. Although about one-half of the nurses who earn doctorates take teaching positions after graduation, many later gravitate to other types of activities. Among the respondents to a survey of nurses with doctorates, conducted in 1980 by the American Nurses' Association (ANA), 36 percent reported that their primary function was in teaching, 33 percent reported that they were in administration (mostly educational administration), and approximately

6 percent were in research. Most of the remainder were performing multiple activities.[9]

Research in nursing has been handicapped by inadequate levels of support. Funding for nursing research fellowships, administered by the Division of Nursing in the Health Resources and Services Administration (HRSA), under the authority of Section 472 of the Public Health Service Act, amounted to about $12 million for the period 1971 to 1981; it has been averaging about $1 million per year since 1977. During the same 10-year period, about $40 million was awarded in research grants; between 1976 and 1981 the level has been about $5 million per year. Over that same period the federal government, through the National Institutes of Health, spent almost $1.7 billion on general biomedical research training and almost five times as much on dental research training as it did on nursing research training.[10,11]

Nurses with doctorates have earned them in many different fields. Of the 6 percent of nurses with doctorates who reported in 1980 that their primary function was research, about 65 percent had a Ph.D., and slightly more than 40-percent had earned these degrees in the social/behavioral sciences. Research as a primary function is most common among nurses who received their doctorates in public health (about 17 percent of the total with these degrees) and in the biomedical sciences (about 16 percent).[12]

The doctoral degrees in nursing (D.N.S. and D.N.Sc.) are granted only by graduate programs located in schools or departments of nursing. However, schools of nursing with doctoral programs also offer other kinds of degrees. In 1982, 1 offered the Ed.D. and 16 the Ph.D. (Appendix 6 contains descriptions of doctoral program offerings in selected departments or schools of nursing). Most doctoral programs in nursing departments are still relatively new. The number of programs grew from 6 in 1970 to 24 in 1982.[13] This expansion brought sufficient problems to suggest that future increases should proceed at a more measured pace. The National Research Council noted in 1982 that a 40-percent increase in the number of doctorate-granting nursing schools between 1977 and 1981 had detracted from efforts to develop quality programs, and that unevenness in the quality of research training programs evidenced in its committee's 1977 survey and site visits had been perpetuated rather than alleviated.[14]

In summary, the scarcity of nurse faculty with adequate academic credentials in the nation's more than 1,000 academic nursing education programs will not readily be alleviated. A long period appears to be needed in which universities offering nursing doctorates can build their capacity to produce greater numbers of high-quality graduates likely to devote their careers to teaching and research. A key feature of this strategy is the availability of targeted research support and innovative programs to enhance the capability of nursing faculty to compete effectively for research grants, including grant funds not specifically earmarked for nursing.

In the short run, some nursing education programs may have to draw on other kinds of academically and clinically qualified faculty from their universities or elsewhere to collaborate in teaching and conducting research. As a corollary, nurses who do not find doctoral nursing programs appropriate to their individual needs--in geographic location as well as in substantive focus--should also be allowed to compete for financial support to pursue an advanced degree in other relevant disciplines. In time, as the number of nurses with doctorates in nursing reaches a critical mass, increased financial and organizational incentives may enable schools of nursing to attract large numbers of faculty with these nursing degrees.

## Advanced Education for Nurse Specialists

A growing interest developed in the 1960s to provide specialist training to RNs that would enable them to respond to demands for greater responsibilities than were found in their traditional roles. Acute care hospitals increasingly required nurses with highly specialized skills. Community health settings highlighted the role of nursing in preventive and primary care. In the 1970s, health policymakers, seeking ways to help medically underserved populations, encouraged the development of nurse practitioner programs.

In 1980, about 24,000 such specially trained nurses provided clinical support to hospital nursing services, of whom about 5,700 were nurse practitioners. Approximately 7,000 other nurses with clinical specialties were in some type of community health work, of whom almost 4,500 were nurse practitioners or nurse midwives.[15] Such nurses receive their special training in a variety of ways, sometimes in staff development programs in an individual institution, sometimes in joint cooperative programs between hospitals or other health care institutions and schools of nursing, and sometimes in graduate degree programs of schools of nursing with arrangements for clinical experience at one or more practice institutions or with practitioner preceptors.

Since 1976, under Nurse Training Act (NTA) appropriations, grants and contracts have been awarded to schools of nursing, medicine, and public health, as well as to hospitals and other public or nonprofit organizations to develop and operate programs (certificate and graduate degrees) to train nurse practitioners. The appropriations began at $3 million per year and increased to $13 million by 1978. However, by 1982 they decreased to $11.5 million. Recently, attention has been directed toward the new potential of training to meet the particular problems of geriatric and nursing home patients, as well as training to provide primary care in homes, ambulatory facilities, long-term care facilities, and other health care institutions.

In developing clinical specialist programs to produce all these new kinds of nurses, the nursing profession responded to market signals that indicated a demand for new services from nurses as well as to federal policy expressed through funding. The educational and experiential qualifications and job content in the market, however, were not yet well defined. As a result, educational programs of varying aims, length, content, and auspices proliferated (see Appendix 4). Nurses who completed these programs are now employed in a wide range of capacities and hold a variety of position titles, for many of which there is no commonly agreed upon definition of role.

The diffuse state of education and credentialing for nurses holding clinical positions beyond the generalist level is illustrated by the following data:

- In 1980, among the estimated 19,000 RNs who held the title of clinical nurse specialist, 15 percent had the AD for their generalist preparation, 36 percent had the diploma, and 21 percent had the baccalaureate degree. Most are presumed to have completed some form of clinical specialty training program; an unknown proportion hold certificates in one or another nursing specialty. The remaining 27 percent (more than 5,000 nurses) had graduate preparation at the master's or doctoral level, and many of them also held certificates. In the same year, among the estimated 8,000 nurse clinicians, 14 percent had the AD as their highest educational preparation, 44 percent had the diploma, and 27 percent had the baccalaureate degree. The remaining 15 percent had graduate preparation.[16]
- Among the approximately 17,000 nurses who reported themselves to be either nurse practitioners or nurse midwives in November 1980, about 10 percent had the AD, and about 40 percent had the diploma as their highest formal educational preparation; 30 percent had baccalaureate degrees; and 19 percent had master's degree preparation. Approximately 13,500 were certified (Appendix 4).
- Among the approximately 15,000 nurse anesthetists reported in the 1980 survey, only a small proportion had graduate preparation. Again, in 1980, the majority were diploma prepared.[17]

Nurse practitioner education programs vary considerably in length and content. For example, certificate programs generally require 8 1/2 months of additional nurse education and average about 6 months of subsequent clinical preceptorship. Master's programs for nurse practitioners require somewhat over 15 months of education and average about 3 1/2 months of such preceptorship.[18]

Nurses pursuing graduate education in advanced clinical practice usually choose an area of concentration. About 37 percent of those enrolled full time in master's programs have concentrated in medical/surgical nursing, 23 percent in maternal/child health, 19 percent in psychiatric and mental health, and 15 percent in public health.[19] Among nurse practitioners (master's and certificate combined), the most common types of specialists were in family nursing (28 percent), pediatrics (about 20 percent), and adult nursing (16 percent).[20]

The forces that originally generated the demand for clinical specialists and nurse practitioners have not abated. The rate of growth in technological complexity of care has not declined. As will be discussed in Chapter VI, there are many medically underserved populations, such as the elderly, for whom the nurse practitioner is well suited to help provide primary care.

In addition to the direct care they provide to patients, the areas in which clinical nurse specialists with graduate degrees reportedly have made the most impact and have the most promise for the future include the following:

- Translating research into practice: The advanced degree nurse prepared to remain current in a specialty can use research findings to develop appropriate nursing care interventions and, acting as a teacher and role model, can ensure that the most efficacious regimens are followed by the staff.
- Education/service collaboration: A critical need to bring nursing education and service closer together (Chapter IV) puts the nurse with advanced clinical practice preparation in a key position as bridge between academic and bedside nursing as a person who incorporates common sets of values.
- Facilitating managerial improvements: The nurse with advanced clinical preparation can help guide management and staff to find more efficient methods for delivering services without compromising quality and can ease many of the frustrations and anxieties leading to excessive staff turnover.

Nurses who have completed clinical education in certificate programs also are needed to provide direct patient care at an advanced level. However, the committee believes there is a need for greater numbers of nurses with higher academic degrees in clinical areas because, in principle, the master's level nurse is more likely to provide the kinds of linkages set out above. Sultz has noted a trend toward a greater proportion of nurse practitioners with master's degrees and suggests that this trend will continue.[21]

## Interrelationships Among Types of Advanced Education

The functional divisions of nursing--administration, teaching, research, and clinical practice--interact and interrelate extensively. Nurses with advanced degrees often perform several types of functions during the course of a workweek. Also, over the length of a career it is not uncommon for nurses and other similar professionals first to engage in one kind of activity and later change to another. Educators may engage in research or clinical practice; administrators may teach or supervise students at an affiliated campus. The responses of nurses with master's or doctoral degrees to the 1980 national sample survey confirmed the occurrence of this phenomenon. Close to half of the 19,800 respondents who were employed in nursing education reported that clinical practice had been the primary focus of their advanced degrees. Conversely, roughly one-third of the 16,000 respondents with graduate degrees who were employed by hospitals reported that education had been their primary focus. There has been a marked shift of focus in advanced degrees from education to clinical practice since 1971, but it has not diminished the flow of nurses with advanced degrees going into nursing education. Thirty percent of the 25,000 advanced clinical practice graduates since 1971 were employed in nursing education in 1980--nearly as many as were employed by hospitals.

As the recommendations in the previous chapter indicate, the committee supports greater collaboration and shared responsibility among the various segments of nursing. Because manpower planning is not so precise as to be able to predict long-range shifts in health system priorities and in consequent market demand for specialists, flexibility in the advanced educational preparation of nurses clearly is desirable. Coupled with efforts to provide sufficient economic and noneconomic rewards in the work setting, investments in graduate education can have a significant payoff in developing nurses who are versatile in addressing deficiencies in the organization and delivery of nursing care.

## The Need for More Nurses With Graduate Education

### Current Supply

Although the growth in the number of nurses with some form of graduate training has accelerated in 1980, as noted earlier, only about 5 percent of all RNs in 1980 held master's or doctoral degrees. Marked increases in the graduations from such programs cannot be expected in the short run because, as with any other graduate education, it takes considerable time to prepare a nurse with a master's or doctoral degree. Furthermore, as we have seen, nursing schools depend on a small supply of doctorally prepared nurses to teach in these and other nurse education programs and to conduct research.

Nurses With Master's Degrees Among the approximately 80,000 nurses with master's as the highest degree in 1980, about two-thirds (55,055) had earned the master's degree in nursing (M.S.N.).[22] About four-fifths of the nurses with M.S.N.s were employed in nursing, as were three-fourths of the nurses with master's degrees in other fields.[23]

The numbers and distribution of master's programs in nursing education departments have increased substantially during the past 20 years--from 43 to 141. By 1981 all but four states had at least one such program.[24] Many, however, are quite small, and in 1980 one-half of all the graduations occurred in only seven states (California, Illinois, Massachusetts, New York, Ohio, Pennsylvania, and Texas).[25,26]

More than one-half of the approximately 15,000 nurses enrolled in master's programs in the 1981-1982 academic year were part-time students, a distinct change from the 1964-1965 academic year when full-time outnumbered part-time students by three to two.[27] The current economic recession threatens to increase further the proportion of students able to enroll on only a part-time basis. It takes part-time students longer than full-time students to complete an educational program. The increase in numbers of part-time students would have to be much greater than the decline in numbers of full-time students if a drop in graduates is to be avoided; how much greater cannot be estimated because it is not known how many part-time students constitute one full-time student or how long it takes for the average part-time master's degree student to complete a program.

Nurses With Doctorates According to the 1980 national sample survey, approximately 4,100 nurses had doctoral degrees. Of these, the survey estimated that close to 3,000 (72 percent) were employed in nursing.[28] The ANA survey of nurses with doctorates, conducted in that same year, however, reported a much higher rate. Among their approximately 2,000 respondents, 91 percent were employed, with almost all of them working full time.[29]

Today, within the population of nurses with doctorates, there is a varied mix of educational preparation--a mix that reflects the historical development of nursing as a profession. The ANA survey found that among their respondents, 17 different kinds of doctoral degrees had been earned from 191 different institutions.[30] Before 1965, the doctorate in education (Ed.D.) was the most common degree for nurses with graduate training. Beginning in the mid-1960s, education as the major field was challenged by a growing interest in the social and biomedical sciences. The establishment of the Nurse Scientist Training Grant programs in 1962 may have influenced the subsequent change in preferred discipline. In any event, by 1980 the Ph.D. had become the leading degree (54 percent). Another 3 percent of nurse doctorates are in public health (Dr.P.H./Sc.D./D.S.Hyg.), and 2 percent are in law (J.D.).

Doctorates in nursing (D.N.S. and D.N.Sc.) were first awarded in the early 1960s. Again drawing on the ANA survey findings, in 1980 about 5 percent of nurses with doctorates held D.N.S. or D.N.Sc. degrees. Assisted by Nurse Training Act funds, the number of doctoral programs located in nursing schools or departments, where such degrees are granted, grew rapidly during the decade of the 1970s.

The National League for Nursing collects information about doctoral education only from programs located in nursing education departments or schools. In 1980, there were 125 graduations from such programs. Enrollments have been growing, however, along with the numbers of programs, which are now available in 18 states. In 1980-1981, slightly more than 1,000 doctoral students were enrolled.[31] In view of the increase in the number of programs and enrollments, a higher proportion of nurses can be expected in the future to earn the doctoral degree in schools of nursing.

Nursing leaders do not always agree about the type of doctoral education that would best prepare nurses for advancing the professional development of nursing and the scientific base of nursing practice. Those who advocate the doctorate in nursing (D.N.S., D.N.Sc.) argue that while the nurse with a Ph.D. in a cognate discipline helps to generate new knowledge, the nurse with the professional doctorate will apply this knowledge. And among the advocates of the Ph.D., some prefer a Ph.D. in nursing and others prefer a Ph.D. in a discipline related to nursing.[32]

Projections of Future Supply

To replenish or increase the size of the pool of RNs with advanced education requires first that there be an adequate pool of RNs with baccalaureate degrees eligible to enter advanced degree programs. As noted in Chapter II, the number of annual graduations from baccalaureate programs more than doubled between 1971 and 1981, growing from about 11,000 to 25,000 during that period. Within the study's intermediate projection total of 1,710,000 RNs at the end of 1990, the number with baccalaureate or higher degrees will have increased by about one-quarter of a million. Unless baccalaureate graduation rates were to fall dramatically, which is not anticipated in our projections, baccaluareate nurses will continue to provide an ample reservoir from which candidates for advanced degrees can be drawn.

Given this basic premise, the committee's estimate of the future supply of nurses with graduate education by 1990 is based on the current capacity of the educational system to prepare them and on the assumption that (1) increasing numbers of RNs will seek such education in line with the trends of the 1970s, (2) current rates of labor force participation by nurses with master's and doctoral degrees will continue, and (3) financing of graduate nursing education from all the major sources that have contributed in the past to increasing the supply will also suffer no major dislocations.* To the extent that these assumptions prove correct, a substantial growth is indicated during the 1980s.

The committee estimates that by the end of 1990 there will be 124,200 employed nurses with master's preparation, of whom about four-fifths will have M.S.N. degrees, and that there will be about 5,800 employed nurses with doctoral degrees. These projections were derived as follows.

Nurses With Master's Degrees In 1980 there were 55,000 RNs with master's degrees in nursing, of whom 44,700 (81 percent) were employed in nursing.[33] In 1971, about 2,000 M.S.N. degrees were granted; by 1981, the number had risen to more than 5,000.[34] The number of graduations from M.S.N. programs represented about 2 percent of the pool of eligible potential candidates for such nursing degrees--i.e., all employed nurses with the baccalaureate in nursing as their highest degree.

If the proportion remains at 2 percent, the number of master's degrees granted in nursing would continue to rise by some 500 per year. This would result in a total of 9,500 such degrees granted in the year 1990, and would yield an additional 68,000 nurses with master's degrees in nursing over the decade. Added to the numbers in the present supply (adjusted for mortality and dropouts) and at activity rates continuing at 81 percent, this would give a total of about 100,000 nurses with master's degrees employed in nursing by the end of 1990.

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*As in the overall supply projections in Chapter II, estimates of future supply are presented in terms of the numbers expected to be employed in nursing--not the total numbers of nurses that have obtained graduate degrees.

To this must be added those with master's degrees in other fields. This number stood at about 26,700 in 1980, of whom 20,500 were employed (77 percent). There are no adequate data to project this portion of the total, but if the number employed in 1990 is assumed to be 25,000, the total number of employed nurses with master's degrees would be nearly 125,000 in 1990. This would translate to some 112,400 full-time equivalent (FTE) nurses with master's degrees.

Nurses With Doctoral Degrees In 1980 there were 4,100 RNs with doctoral degrees. Taking the conservative estimate from the 1980 national sample survey, almost 3,000 (72 percent) were employed in nursing.[35] During the past 20 years, fewer than 850 doctoral degrees have been granted in programs located in nursing education departments.[36] However, the number has been growing, and in 1980 125 doctoral degrees in nursing were granted from such programs.[37] Full-time enrollment has been more than 50 percent since 1979. Growth rates over recent years suggest that the number of graduates soon will reach 200 annually and could reach 400 by 1990 if there are places and faculty adequate to increase the output by 25 per year each year from 1980 through 1990. This would mean a total supply in 1990 of 3,900 at the doctoral level from programs in nursing departments, of whom some 3,000 would be employed in nursing.

Of the 3,000 employed nurses with doctoral degrees today, probably some 2,300 received their doctorates in programs outside of schools of nursing. Because there are so many kinds of programs, numbers are difficult to ascertain except through special surveys such as that conducted by the ANA in 1980. If this group also continues to grow, by the end of 1990 there will be at least 2,800 employed nurses with doctorates in other fields. Therefore, in total, there would be an estimated 5,800 employed RNs with doctoral degrees in 1990 (i.e., 3,000 nurses with doctorates from nursing programs, plus an additional 2,800 employed nurses with doctorates in other fields--this would be equal to 5,600 FTEs).

## Estimates of Future Need and Demand

The foregoing estimates of future supply contrast sharply with the estimates of needs for nurses with graduate degrees that DHHS projected for 1990 in employing the Western Interstate Commission on Higher Education (WICHE) judgment-of-need criteria. These criteria were developed by a national panel of consultants assembled by the Health Resources Administration's Division of Nursing in the autumn of 1980. When DHHS applied the judgment-of-need (WICHE) model, it projected that for 1990 the minimum (lower bound) need for master's degree nurses was an estimated 256,000 FTE master's level nurses. Our study projects that the supply of such nurses by that date would be considerably less than half of this number. The DHHS estimate of need for nurses with doctorates, generated by this same process, was 14,000 FTE RNs in 1990. This was more than twice the supply projected by our study (Table 28). If one were to accept the judgment-of-need (WICHE) estimates of master's and doctoral nurses that would be required by 1990 to meet its staffing criteria, there would be a tremendous gap between these numbers and the projected supply.

TABLE 28 Comparison of the Study's Projected Supply of Employed Registered Nurses With Graduate Degrees in 1990 With DHHS Estimates of Need Derived From Judgment-of-Need (WICHE) Model

| Type of Degree | Total Employed Actual Supply (Nov. 1980) | Study's Projected Supply (Dec. 1990) Total Employed | FTE | DHHS Judgment-of-Need Model Estimates for 1990 (WICHE Lower Bound), FTE |
|---|---|---|---|---|
| Master's (all degrees) | 65,200 | 124,200 | 112,400 | 256,000 |
| Doctoral (all degrees) | 3,000 | 5,800 | 5,600 | 14,000 |
| TOTAL | 68,200 | 130,000 | 118,000 | 270,000 |

SOURCE: Secretary, DHHS. Third report to the Congress, February 17, 1982, Table 40, p. 177 (see Reference 42 for complete citation).

The other major projection model, based on the historical demand for nurse manpower (Chapter II), does not distinguish between the demands for nurses with different levels of educational preparation. In any event, there are no well-established measures of demand in this area. Many separate and interacting forces in the nation's overall economic environment, in the federal and state governments' ability and willingness to support graduate nursing education, and in the market demand for nurses with advanced degree qualifications will influence the dimensions of demand for such nurses in ways that the committee cannot foresee (Chapter VII).

The fact that we have taken cognizance of these uncertainties does not vitiate our recommendations for strong support of graduate education. Hospitals' demands for clinical specialists are evident in the higher salaries they are willing to pay. The demand for nurses at both the master's and doctoral levels to teach in nursing education programs is self-evident.

In arguing the need for more nurses with master's and doctoral degrees, the committee recognizes the concern, often expressed in manpower discussions, about the cost to society of the general trend in all professions toward overcredentialing. We have not been able to quantify the necessary additions to supply in the various functional areas of nursing. Nonetheless, in the committee's judgment, a substantial increase in output of nurses with graduate degrees will be required to achieve even modest goals in maintaining and improving the leadership cadre of the nation's nursing resources.

## The Effect of Financing on Future Supply

The success of efforts to lessen existing gaps will, in large part, depend on the ability of students to afford advanced degrees. Graduate students have higher tuition than undergraduate students. Full-time graduate students in nursing education programs face 1-3 years with annual tuition costs of $1,000 to almost $10,000, depending on whether the program is in a public or private institution of higher education.[38] Annual tuition charges generally are the same for all graduate students, whether they are enrolled in master's or doctoral programs. Graduate students tend to be self supporting (financially independent of their parents) and thus have higher living expenses than most undergraduates (see Table 22). For a student who is a RN, forgone earnings can be estimated to be over $17,000 annually, according to data on average earnings from the 1980 national sample survey.[39] Such expenditures, particularly toward the higher end of the range and when forgone earnings are included, can generally be undertaken only by students willing to make large sacrifices or by students having some private or public student aid.

Little information is available on the sources on which master's degree candidates draw to finance their education. However, the 1980 ANA survey, referred to above, reports that nurses with doctorates received financial support from a variety of sources (Table 29). Federal training grants were by far the most frequently reported source. Federal loans and research grants also contributed a small but important part. Universities, through fellowships and through teaching and research assistantships, were reported to be another important contributor. By contrast, state government support and loans for doctoral students appear to have been negligible.

### Federal Support Programs

Of the total $1.6 billion appropriated under the Nurse Training Act and National Research Services Award Program between 1965 and 1981, $70 million went for general institutional support of advanced nurse training and $206 million for nurse traineeships in master's and doctoral programs (Appendix 2). An additional $75.5 million was granted to institutions to encourage the development of nurse practitioner programs.

TABLE 29 Financial Support Received During Doctoral Study by Nurses With Doctorates in 1980

| Source of Support | Number of Nurses Reporting Receiving Support (Frequencies)[a] |
|---|---|
| No support | 442 |
| Federal government | |
| Training grant | 983 |
| Loan | 118 |
| Research grant | 90 |
| University | |
| Fellowship | 185 |
| Teaching assistantship | 174 |
| Research assistantship | 132 |
| State government support or loans | 101 |

[a] Not an unduplicated count of recipients, because a nurse may have reported more than one source of support.

SOURCE: From ANA. Nurses with doctorates, Table 28, p. 76 (see Reference 9 for complete citation).

Advanced nurse training grants and contracts are made to collegiate schools of nursing to plan, significantly expand, or maintain programs to prepare nurses at the graduate level--whether as administrators, teachers, or clinical specialists. Special emphasis is now given to three clinical specialties: geriatrics, community health nursing, and maternal and child health. Between 1979 and 1981, about 80 percent of the areas of concentration in these programs were in clinical specialties and about 10 percent each in education and administration.

Approximately 16 percent of master's level students are enrolled in programs now supported in part at least by the NTA's advanced nurse training program; 73 of the 141 schools currently offering master's and/or doctoral degree education have received program support.

About 90 percent of the programs were at the master's level and 10 percent at the doctoral level. In 1981, about 2,500 FTE students were enrolled in the programs assisted, of which approximately 1,500 students were full time.

Funding for student traineeships under the NTA began in fiscal year 1965 with $8 million, increasing to approximately $13 million in 1974. It remained at that level until 1982, when the amount dropped to $9.6 million. The NTA traineeships provide grants to graduate schools of nursing and to schools of public health, which in turn provide traineeships for up to 36 months for students working full time toward a master's or doctoral degree. Nurses are prepared to serve as teachers, administrators, and supervisors; as nurse practitioners; and in other professional specialties determined by the DHHS Secretary to require advanced training. These are the same specialties that have been supported by the NTA's advanced training program.

The DHHS Division of Nursing estimates that during the 1979-1980 academic year 3,000 full-time students received assistance through advanced nurse traineeships.[40] In 1981, awards made to 126 schools supported about 2,000 trainees at approximately $6,400 each. Without these funds, in all likelihood the numbers of full-time students would have been reduced, thus slowing the increase in the number of these nurses coming into practice.

In addition to the advanced nurse training grants and the nurse traineeship program, unknown proportions of the funds allocated under the NTA to programs for nurse practitioners and special project grants, as well as student loans, supported nursing students enrolled in graduate programs.

The National Institute of Mental Health has been another substantial contributor to advanced nursing education, awarding more than $105 million for teaching costs and stipends in the period 1970-1981. The vast majority of the more than 13,000 stipends awarded went to students earning master's degrees; a few were granted to undergraduate and doctoral students.[41] The Veterans Administration and the Department of Defense also provide advanced nurse training stipends.

In summary, during the past 18 years the total amount of federal aid for graduate education from various sources has been substantial, probably more than $460 million--and the impact significant. During the period 1971 and 1981, graduations from master's programs increased 40 percent and more than doubled in doctoral programs. This increased the proportion of RNs holding master's and doctoral degrees from 4 to more than 5 percent in the total population of RNs. Although it cannot be argued that all who used these funds would not have completed advanced education in their absence, certainly the growth in the supply of these nurses would have been diminished, because the funding went to build up program capacity as well as to support students.

The committee believes that in the years ahead, the quality of nursing services will depend directly on the extent to which growth is sustained in the supply of nurses with higher degrees. Current authorization and appropriations are insufficient to support such growth. These graduate programs should be viewed as potentially cost effective in promoting major positive impacts on the quality and effectiveness of nursing services. Hence, they should be regarded as strong elements in the total strategy of conservation of federal outlays for health care.

Federal appropriations under NTA and related authorizations for graduate education and other advanced nurse training were maintained at about $40 million between 1978 and 1981, decreasing to about $34 million in 1982. Although we recognize the nation's current severe federal and state budgetary straits, the committee is concerned that failure to maintain an adequate floor of support for master's and doctoral education of nurses will cause long-term damage to the quality of the nation's nurse supply. Restoration of federal support at least to the average 1980-1982 level of approximately $40 million would help ensure that the foundation for further growth of professional nursing will continue to be maintained.

As the capacity of the education system to graduate greater numbers of postgraduate nurses expands and as costs of education increase, the need for a higher level of federal support may follow. A number of factors will require careful consideration: the capacity of the health care and educational systems to use effectively the different types of graduates; the levels of state support and of continuing federal support needed to attract sufficient numbers of students into postgraduate programs; and also the possibility that salaries of nurses with advanced preparation may rise to the point that prospective students will wish to make greater personal investments in such education.

## Conclusion

Unlike the situation with respect to basic supply of generalist nurses, where we have found the likelihood of a general balance between supply and demand in 1990, the committee concludes that there is both a serious current and probable 1990 shortage of nurses educationally prepared for administration, teaching, research, and advanced clinical nursing specialties. The extent of the future shortage cannot be estimated because various perceptions of need, except possibly as regards faculty positions, may not necessarily result in effective demand. Nevertheless, there is such an obvious gap between the present supply and educational capacity of the system on the one hand and even conservative estimates of future advanced positions required on the other, that existing program capacity and sources of student support at the graduate level should be expanded.

In examining the future need for nurses, the committee identified problems that cannot be resolved merely by increasing the supply of nurses with basic education, but may be alleviated by increasing the supply of nurses with advanced education. First, the management of nursing resources is less than optimal. The complexity of today's health care settings demands nurse managers who are skilled not only in nursing but also in the techniques of managing personnel and budgets. Second, the quality of nurses delivering care at the bedside and in the community to a great extent depends on the capabilities of their teachers. They must within a relatively short period impart the theoretical and clinical knowledge necessary to produce competent professionals. The claims of nursing education leaders that the current composition of the faculties of many nursing schools is inadequate to accomplish this job properly is borne out by the comments of employers as well as information comparing the preparation of nursing faculty to that of other disciplines. A closely related issue is the lack of research to inform nursing practice and to enhance nursing education--functions usually performed in health and sciences by those in the discipline who are academically based (see Chapter VIII). Third, although well qualified generalist nurses can deliver care effectively, the growing complexity of services in many health settings presents problems that also increasingly require the specialized knowledge and experience of nurses with advanced education.

In times of severe economic constraints, states may be more willing to finance basic nursing education programs, which are perceived as directly fulfilling local demand for nurses, than master's programs, whose graduates can be expected to be more mobile. They have never provided much financial assistance to nurses in doctoral programs. The committee believes that RNs with high-quality graduate education are a scarce national resource and that their education merits federal support.

The demand for highly qualified nursing administrators, nurse educators, researchers, and clinical specialists prepared at the graduate level has been increasing and is expected to continue to increase, but to meet it only a small portion of nurse faculty are yet prepared at the doctoral level. To increase the nation's supply of nurses with advanced degrees, public and private universities with graduate programs must expand and strengthen their nursing education faculties. In the face of the current shortage of academically qualified nurse faculty with expertise in fields relevant to nursing, such as management, the behavioral and basic sciences, and research methodology, deans of schools of nursing could draw faculty from appropriate schools and departments in their universities or neighboring institutions both to fill immediate needs and to help build future teaching and research capabilities. Joint programs and other forms of collaborative arrangements between university departments, such as schools of nursing with business schools and/or health services administration programs, may be found desirable. Programmatic support from the federal government can help to improve graduate level nursing education in these and other ways.

Lowering financial barriers to full-time enrollment of nurse graduate students will increase the supply more rapidly. Master's and doctoral students who must work to support their education take longer to complete it. Financial assistance to nurses in master's programs should be packaged with federal funds for programmatic support. The committee would expect, in line with the objective of strengthening the nursing profession as well as nursing education, that such programmatic and accompanying student support for master's programs would be available through competitive grants. In practice, master's programs located in schools or departments of nursing would be in an excellent competitive position to secure such grants, but arrangements in other related programs should be possible, such as in health services administration programs and schools of public health.

Federal doctoral level support should be targeted primarily to strengthen existing programs in nursing, not to encourage the proliferation of new and possibly weak doctoral offerings. Until schools of nursing have sufficient numbers of qualified faculty to meet the range of RN doctoral students' scholarly interests and professional needs, financial aid programs to RN doctoral students should be designed so that they are not precluded from pursuing doctoral studies in nursing-related disciplines. To encourage graduate students to return to nursing when they have earned their degrees, loans should carry such service obligations. On the other hand, most committee members believe that fellowships, awarded on the basis of scholarly excellence and the promise of fundamental contributions to the knowledge base, should not carry the same kind of obligation.

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RECOMMENDATION 8

> The federal government should expand its support of fellowships, loans, and programs at the graduate level to assist in increasing the rate of growth in the number of nurses with master's and doctoral degrees in nursing and relevant disciplines. More such nurses are needed to fill positions in administration and management of clinical services and of health care institutions, in academic nursing (teaching, research, and practice), and in clinical specialty practice.

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## Statement of Exception to Recommendation

As members of the nursing study committee of the Institute of Medicine, we are most supportive of the general thrust of the committee's recommendation, but take exception to the phrase in its first sentence: "...and relevant disciplines." The rationale for not supporting this aspect of the recommendation is presented in this minority position statement.

The congressional charge to the nursing study committee was in part "to determine the need to continue a special program of federal financial support for nursing education," (emphasis added) not education of nurses in disciplines other than nursing. Nurses have the same freedom as do other American citizens to pursue graduate study in their own discipline or in an alternate one, and each discipline has the academic prerogative to admit students of its choice regardless of their previous educational preparation. However, it is our belief that (1) nurses admitted to graduate degree granting programs other than nursing, and (2) programs in disciplines external to nursing that admit nurses for graduate study should not be included under a "specific program of Federal financial support for nursing education." Federal funds for strengthening nursing education are already minimal and would be further diluted if they were channeled to provide financial support to programs and students (even though nurses) in disciplines other than nursing.

Many portions of this report have focused on the urgent need for nurses with graduate education in nursing (master's and doctoral levels) to fill faculty and administrative positions in nursing. These nurses should be enrolled in graduate nursing programs so as to become more knowledgeable in their own disciplines and, subsequently, to be able to assist in the strengthening of nursing through the use of advanced nursing knowledge in clinical practice and teaching, and the generation of new knowledge in nursing. This expectation is not different from that in other disciplines where advanced degrees or academic study are offered, i.e., psychology, sociology, physiology, medicine, theology. Our stated belief does not preclude the opportunity for nursing and other students to take courses in other disciplines that have value to one's own, or in unusual situations perhaps to offer a joint degree program. An example of this at the master's level is the collaboration of schools of nursing and schools of business management in the preparation of top level nursing service administrators. However, we believe the nursing study committee is lacking in conscience to support and document in this report the numerous reasons why nurses should have advanced education in their own discipline and yet approve a recommendation that endorses nurses to obtain graduate education at either the master's or doctoral levels in fields other than nursing and request federal funds for such. In reality nurses with master's degrees in non-nursing disciplines will not be prepared, nor will they meet the required qualifications of most clinical or educational institutions for leadership positions in nursing, nor will they be eligible for doctoral study in nursing. Thus, federal support of nurses to obtain non-nursing graduate degrees will not assist in meeting the intent of Recommendation 8 of this report or other recommendations related to it.

Until recently, doctoral programs in nursing were limited in number, and nurses had little option but to pursue doctoral degrees in disciplines external to but related to nursing despite the additional time and expense involved to make up course deficiencies. As would be expected, there were the disadvantages of no nurse role models being available for mentorship and the focus of one's research being in that discipline rather then in nursing. In many cases nurses remained in the discipline (not nursing) in which doctoral preparation was obtained and were "lost" to nursing. It was because of this result that the Doctoral Nurse Scientist Program, supported by the federal government, was discontinued in the mid-70s. Moreover, faculty in schools of nursing with preparation in disciplines external to nursing are often not perceived as true colleagues in either these disciplines or in nursing.

The general value of learning research methodology in either the social or natural sciences has been recognized by nurses who have obtained doctoral degrees in these disciplines, but in many instances their study and research efforts have not focused on identification of a body of scientific knowledge to provide a basis for the practice of nursing and the control of that practice. The development of knowledge and competencies unique to nursing must be produced by nurses with advanced education in nursing and whose research is focused on clinical nursing practice. This preparation falls within the domain of doctoral education in the discipline of nursing, and graduates of such programs will (1) provide leadership in clinical practice and research; (2)

teach in baccalaureate, master's, and doctoral programs in nursing; (3) administer nursing service and nursing education programs; and (4) provide role models and mentors for future doctoral students in nursing.

Doctoral preparation in a discipline other than nursing deters the socialization process and career expectations within one's peer group. It also fosters an orientation to another field of knowledge and, invariably, the dissertation research, which often sets the focus of future research, is unrelated to a nursing problem. Disciplines external to nursing have had a much longer time to establish and add to their knowledge base, and now nursing urgently needs federal funds, especially fellowship support, to attract well-qualified nursing students to continue the strengthening of doctoral nursing programs and, ultimately, to add to the knowledge base of nursing. Nursing doctoral students need the flexibility of obtaining fellowship support to study with nursing faculty of their choice who can serve as mentors within the students' specialization area. Many of these graduates with advanced nursing preparation will in turn enter academic nursing to teach nursing students, while also strengthening the theoretical and clinical application bases of the discipline of nursing. Of about 1.7 million registered nurses in the United States in 1980, only about 4,000 (0.2 percent) held doctorates. Of these, fewer than 850 degrees (21 percent) were earned in doctoral programs located in departments or schools of nursing.

Thus, it is crucial that existing doctoral programs in nursing be strengthened and expanded, and that scarce federal funds be channeled to them rather than to doctoral programs of other disciplines. The number of nurses making application to existing doctoral nursing programs is significantly more than can be accommodated due to a lack of faculty prepared at the doctoral level in the specialized areas of nursing desired by these extremely well-qualified applicants. With opportunities to serve as either a research or teaching assistant in doctoral nursing programs these students will have early influence from their nursing professors to be productive in scholarly activities in the field of nursing. Such mentorship in nursing would not occur if students were enrolled in doctoral programs of other disciplines.

In summary, "a specific program of Federal financial support for nursing education" at the graduate level (master's and doctoral) should be available only to nursing programs and students admitted to those programs. Upon graduation these nurses with advanced nursing preparation will quantitatively and qualitatively influence the generation of new nursing knowledge and the dissemination of nursing knowledge to future generations of nurses. Educated within the disciplines of nursing, these leaders in nursing will join with colleagues of similar interests and be productive in bettering the health of society.

Ruby L. Wilson

Dorothy Novello

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# CHAPTER VI

# Alleviating Nursing Shortages in Medically Underserved Areas and Among Underserved Populations

In earlier chapters this report has dealt with issues of aggregate supply and demand for nursing as a whole and for nurses with different levels of educational preparation. Another distributive aspect of the supply problem was posed in the second of the congressional questions that occasioned this study: "What are the reasons nurses do not serve in medically underserved areas and what actions could be taken to encourage nurses to practice in such areas?" The committee viewed these issues as being more extensive than would be implied by statutory or regulatory definitions of the term "medically underserved areas." We believed that this question called for an exploration of the problems of maldistribution as they affect certain geographic areas, certain population groups, and certain types of facilities that experience chronic nurse shortages resulting in underservice to large numbers of patients. This chapter focuses on availability of the services of nurses to residents of inner cities and rural areas, to minority ethnic groups and elderly citizens, and to patients in public hospitals and nursing homes.

There are commonalities among the geographic areas, population groups, and institutions identified as suffering from the maldistribution of nursing personnel. For all of them, indications of severe unmet nursing needs persist and are not likely to be self-correcting under foreseeable market conditions.

The magnitude of the problem is suggested by estimates that 20 million residents of inner city and rural areas are without a regular source of primary care,[1] and that approximately 12-15 million Americans are "structurally underserved"--that is, their difficulties of access to nursing services are tougher and more complicated than those of the rest of the population.[2]

This chapter first describes the nature and consequences of underservice and examines recent attempts to attract nurses to underserved areas and increase the representation in nursing of economically disadvantaged individuals. Nursing service problems of the inner cities and the elderly are then discussed. The chapter concludes with a look at the functions of nurse practitioners in alleviating problems of underservice.

## Some Reasons for Areas of Underservice

Lack of access to preventive, primary, and acute care services by people living in inner cities and in rural communities remains one of the nation's most pressing health problems. It ranks with the lack of access to effective preventive and maintenance care of the nation's elderly, large numbers of whom may as a result become untimely afflicted with worsening chronic conditions that lead to long-term institutionalization. Among all underserved populations, barriers to care are created by lack of adequate financing, transportation problems, lack of health care facilities, and lack of health manpower to staff facilities or provide services outside health care institutions.

The obvious explanation of nursing and other health manpower shortages lies in the nature of the nation's health care financing arrangements. Inadequate public or private coverage to pay for services to very large numbers of low-income people results in lack of programs or lack of access to programs and facilities that can meet their medical and other health care needs. Inadequate financing and the resulting inappropriate services make it unlikely that nurses will seek or be able to find employment, even though they may wish to work in an underserved area or with underserved people.

We believe that solutions to the problems of medical underservice eventually will require a long-range restructuring not only of the nation's health care financing, but also of health services delivery arrangements. Other public commissions and studies have come to similar conclusions. While it was not within our purview to address these fundamental problems, the study necessarily became concerned with their implications as principal factors in the maldistribution of nursing personnel. In this context, the committee has responded to the request for suggestions likely to help alleviate existing nurse shortages in medically underserved areas.

## The Nature and Consequences of Underservice

Many rural and semi-rural areas, where 30 percent of the nation's population lives, are characterized by low population density, disproportionate numbers of poor and elderly, vast distances, and small hospitals.[3] Providing health care in these circumstances presents multiple problems.

Most nurses are employed by hospitals, nursing homes, physicians, and health departments. Therefore, most nursing care depends on the presence of such employers, but they are not found in many remote communities. Approximately 500 of the nation's more than 3,000 counties currently have no hospital.[4] The economics of supplying adequate levels of health services to poor and remote populations and the heavy workload associated with being a solo practitioner make remote and poor rural areas unattractive to physician practice. In

1979, 143 counties had no active physician, federal or non-federal, engaged in patient care.[5]

These and other factors result in employed nurse-to-population ratios that are usually much lower for rural than for urban areas. The 1977-1978 Inventory of Registered Nurses showed that the ratio of employed registered nurses (RNs) per 100,000 population ranged from a low of 268 in Arkansas, a largely rural state, to 885 in urban District of Columbia. Moreover, such comparisons fail to reveal the often substantial pockets of underservice that frequently exist in a state. Among the areas alone that were not standard metropolitan statistical areas (SMSAs), this ratio ranged from a low of 162 in Louisiana to a high of 892 in New Hampshire.

Vacancy rates for nurses in hospitals are not markedly different in small and large institutions, but hospitals in non-SMSAs have more recruitment problems than do their urban counterparts.[6] State studies and testimony from hospital representatives have noted the special difficulties associated with nurse shortages in rural areas. In testimony before the Senate Finance Committee, one witness commented that there was an immediate need for at least 300 RNs in 61 Montana hospitals, most of which are in rural areas. He also noted that while a nurse vacancy in a large hospital may not be really crucial, "when a small facility loses one nurse, that's a crisis situation."[7] Further, he observed that Montana's small rural hospitals consistently upgrade their salary and fringe benefits to meet and, in some cases, exceed those of the larger facility in order to attract nurses to their hospitals.

Other testimony suggests some factors that detract nurses from rural service. "Rural nurses are asked to assume greater responsibility, are often on call 24 hours a day. . . . Rural public health nurses find their salaries and working conditions determined by county commissioners who are often more concerned with building and maintaining roads and bridges than quality health care. Feeling frustrated...they leave their chosen profession."[8] Additionally, fluctuations in patient census tend to make some rural hospitals unreliable employers. And where the absence of other providers puts major responsibility for health care on public health nurses, the level of funding may support only a minimal number.[9]

These problems and others lie behind the fact that in rural areas 21 percent of black children and 14 percent of white children had no physician visits in 1981 compared with 10 percent and 9 percent, respectively, of children in SMSAs.[10] Residents of non-metropolitan areas are also less likely to have preventive care and more likely to spend more than 30 minutes traveling to a physician visit and to experience longer waits once there. Seventeen percent of physician visits by residents of non-SMSAs occurred in metropolitan areas.[11]

Nursing shortages in rural areas are only one aspect of the problem of underservice. Minority, immigrant, and other low-income populations in many urban areas of the nation also can lack access to health care. Large concentrations of these people are found in inner city areas, where nursing and other health care services present particular problems.* Although the gap in utilization of health care between the poor and nonpoor in both urban and rural areas that existed quite generally prior to the 1960s almost closed between the mid-1960s and 1980, serious problems of access nevertheless remain, particularly in the settings where poor and minority people--notably blacks and Hispanics--receive care.[12] For example, a study in Boston found a 4 percent decline in the number of inner-city residents who had a personal physician between 1975 and 1981, despite a 7 percent increase in the nationwide physician-to-population ratio during this period.[13]

Differences between the health status of underserved populations (whether rural, urban, poor, or minority) and better served groups also indicate unmet needs for health care. Household interview surveys conducted by the National Center for Health Statistics in 1979 found that consistently greater proportions of residents outside of the standard metropolitan statistical areas than SMSA residents reported health conditions that made them unable to carry on major activities of daily living. More than 14 percent of the non-SMSA residents rated their health as only fair or poor, compared with 11.4 of the SMSA residents.[14]

People in federally designated medically underserved rural areas have 24 percent higher hospital utilization, 33 percent more disability days, and 22 percent more chronic limitations than do those in rural areas not so designated.+ Mexican-American migrant agricultural workers are said to have a much lower life expectancy and higher rates of illness than does the population as a whole, but scant data are yet available to describe their health status.

## Educational Outreach

Since the mid-1960s the federal government, the states, and higher education systems have adopted various strategies designed to alleviate identified nurse shortages in medically underserved areas.

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*Currently, blacks constitute 28 percent of the population of large central cities compared with 12 percent of the total United States population, and Hispanics constitute 11 percent as opposed to 5 percent. A disproportionate number of inner-city residents have incomes below the poverty level, 17 percent versus 12 percent of the total United States population.[15]

+Over the years the federal government has defined geographic areas of underservice using a variety of criteria. The areas have been variously delineated as Medically Underserved Areas, Health Manpower Shortage Areas and Nurse Shortage Areas. Many technical problems have been encountered in attempting to define these areas of underservice so as to accomplish program objectives. This report does not address these technical issues but notes that discussions concerning definitions of underservice are continuing.

One such strategy has been to offer financial incentives through educational loan repayment arrangements designed to attract nurses to serve in such areas. The strategy implies a hope that an appreciable proportion of such nurses will remain in the shortage area after their service obligation has been met, but there is no evidence either way. At the federal level, examples include programs under the Nurse Training Act (NTA) of 1964 and subsequent amendments, and National Health Service Corps authorizations.

The NTA Nursing Loan Repayment Program offers repayment of a portion of an RN's educational loan in return for 2 or 3 years of service in a designated nurse shortage area (Appendix 2). Between 1974 and 1981 approximately 219,000 nurses received educational loans but only 128 accepted the option of service in return for loan repayment. The failure of the program has been commonly attributed to the more favorable terms offered by the Federal Nursing Loan Cancellation Program, which allowed cancellation of up to 85 percent of an education loan for practicing nurses working in a public or nonprofit hospital, health center, or other health care agency for more than 1 year, regardless of location or population served.[16]

The National Health Service Corps Scholarship Program also used the incentive of repayment of educational loan in return for a service obligation. Of the 564 nurses awarded scholarships, almost all met the service obligations, but data were not collected to indicate whether any were staying in the shortage area after their obligated service. The Nurse Practitioner Traineeship Program under NTA described in Chapter V also offered payback incentives for service in shortage areas. Again, because the current status of 50 percent of the traineeship recipients is unknown, the program cannot be evaluated. Nurse education programs are not required to keep records or report on where their graduates practice.

A second strategy--facilitating nurse education for those most likely to work in underserved areas--is built on the assumption that people who already live in such areas are more likely to remain than are those attracted for a limited tour of service. Evidence supports this hypothesis. Feldbaum's 1977-1978 survey found that nurses who grew up in rural areas were the most likely to return to work in such areas, and that a large proportion of nurses who work in inner cities had grown up in large cities.[17] Another recently completed nursing study, in North Carolina, found that nurses cited living in the areas as a prime reason for remaining employed in rural areas and in long-term care institutions. The very high response rate--95 percent for hospitals, 75 percent for long-term care facilities, and 93 percent for health departments--makes these findings credible.[18]

Local access to education appears to be important in determining where newly licensed nurses will work. For example, the National League for Nursing's (NLN) 1980 survey of newly licensed nurses from associate degree (AD), diploma, and baccalaureate programs found that more than 61 percent of AD graduates reported their residence at licensure as being in the same county as the location of their schools, and that 75 percent of these graduates had the same residence at licensure as the location of their employer 6 to 8 months after licensure. Corresponding rates in a similar period for diploma graduates were 53 percent and 69 percent. Baccalaureate graduates were more mobile, presumably because programs were not so widely dispersed geographically. Their county residence at licensure was the same as the location of their schools for only 41 percent of the graduates. However, about 65 percent of these baccalaureate graduates reported that the location of their employer 6 to 8 months after licensure was in the county in which they had lived at the time of licensure.

No county residence data are available to show geographic mobility of nurses over the longer run of their practice. However, 10 years after licensure, 63 percent of AD and 41 percent of baccalaureate graduate nurses reported having practiced in only one state.[19] Thus, there is some evidence to indicate that the location of the nursing education program is a determinant of where a licensed nurse chooses to work.

Practical nurses also tend to live and work in the areas where they receive their nurse education. The NLN 1980 survey of newly licensed practical nurses reported that at the time of licensure, over 60 percent of new LPNs were living in the same county where their nurse education program was located. Less than 5 percent had obtained their education in a different state.[20]

Improvements in the accessibility of nursing programs are needed to encourage residents of underserved areas to enter nursing. Many potential students from such areas--especially those in rural communities--are unable to avail themselves of nursing education. Programs are not likely to be locally available and family responsibilities, costs, and travel distances often combine to prevent potential students from moving to communities where such programs are located. These factors, together with past experience, suggest that locating nursing education programs directly in or near medical underservice areas is a useful strategy in addressing nursing supply problems.

At the federal level, the Area Health Education Center program (AHEC) has in several states mounted more narrowly focused attempts to bring nurse education to residents of underserved areas. AHEC programs encourage training for a wide range of health occupations, and also provide continuing education. The programs are offered through arrangements with existing educational and health care institutions to increase courses and to offer training experiences at hospitals and other sites in and near rural and urban underserved areas. Nursing education has received special attention in the AHEC programs in California, North Carolina, Massachusetts, and Colorado.[21]

In most states, community college systems have made considerable progress in developing locally accessible programs to prepare RNs and LPNs. However, where populations are not sufficiently dense to yield sufficient numbers of students, and where local educational resources are inadequate to provide an institutional base and faculty for the types of nurse education programs that prospective students may require, it is not economically or educationally feasible to provide local nurse education programs. Outreach nursing education programs from state universities or from large schools of nursing offering generalist nursing education, continuing education, and even graduate education can provide an alternative to the proliferation of autonomous, inadequately staffed new schools. Outreach programs also can upgrade the education of nurses already practicing in these areas.

Several programs funded under the NTA are demonstrating that nursing education programs can be offered at off-campus locations to students unable to travel or to relocate. In some instances, such as at Weber State College in Ogden, Utah, nursing faculty pay regular visits to rural communities to teach basic nursing education courses. Their students come to Ogden for short, intensive clinical experience at an affiliated community hospital. There are several variants of this type of outreach. Examples include California State University at Fresno, Montana State University, the University of Maryland (offering baccalaureate degree training to RNs with ADs or diplomas), and Wayne State University (offering master's degree preparation to RNs in remote areas of Michigan).

Television, videotapes, and other technical advances are expanding the possibilities for reaching students in remote areas or areas that lack access to schools of nursing. Today, thousands of non-nursing students are enrolled in televised courses. Several hundred colleges are members of a network working in collaboration with local television stations to offer courses.[22] All these various types of programs, on and off the main campus, that offer flexibility and career mobility at various levels of nurse education appear to be sufficiently promising to merit continued support for their further development, evaluation, and dissemination of results.

## Conclusion

There is little evidence about the success of federal efforts to relieve nursing shortages in underserved areas by financial incentives to attract nurses to move there. In many instances it appears they stay for only a limited period of service. Another approach, however--attracting residents of shortage areas into nursing--appears to have a greater potential for success. The committee notes that:

- RNs and LPNs tend to practice in or near their places of origin; for rural areas that implies attracting into practice rural residents; for inner-city urban areas it implies attracting to nursing inner-city residents who are often poor and of minority racial or ethnic groups
- RNs and LPNs tend to practice in the areas in which they received their nursing education
- many potential candidates for nursing education are unable to relocate to gain access to nursing education
- new forms of communication technology offer opportunities to develop outreach and satellite nurse education programs.

However, it is unrealistic to expect that access to nurse education by residents of underserved areas will occur without special targeted efforts. State and federal governments need to continue to provide special initiative grants to schools of nursing to make their educational programs available to residents of these areas through various kinds of outreach programs. New forms of communication technology that offer opportunities for outreach and satellite nurse education programs have not been sufficiently exploited. Such programs can be designed to suit the requirements and convenience of prospective students who, for reasons of family, residence, or the need to continue employment while studying, cannot readily attend existing campus educational programs.

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RECOMMENDATION 9

> To alleviate nursing shortages in medically underserved areas, their residents need better access to all types of nursing education, including outreach and off-campus programs. The federal government should continue to cosponsor model demonstrations of programs with states, foundations, and educational institutions, and should support the dissemination of results.

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## Education Opportunities for Minority Students

In the same way that minority racial and ethnic groups frequently lack access to health care and have more illness than many others, members of these groups also have inadequate access to opportunities for nursing education.[23,24]

Although there are no easy solutions to the access problems of minority groups, studies by Sloan and Feldbaum suggest some strategies for improvements. Recruiting black and other minority people to join the nursing profession may help to increase the number of practical and registered nurses willing to practice in inner-city areas serving minority and underserved populations. This is consistent with the evidence that nurses tend to practice where they grew up. According to Feldbaum's studies of work location, black nurses are more inclined to work in the inner city (41.1 percent) than are their white colleagues (18.4 percent). Further, 30.8 percent of black nurses spend more than one-half of their RN working years in these locations, compared with only 8.1 percent of whites.[25]

Most nurses do not want to work in the inner-city environment, which is widely perceived to be not only stressful but also unsafe. Sloan reported that 72 percent of RN respondents to a survey were not willing to work in poor sections of cities, even for higher earnings--compared with 42 percent who were unwilling to work in rural areas.[26] However, the obverse of Sloan's findings about unwillingness to work in inner cities is that for 28 percent of nurses that was not the case. Sloan also found that black nurses are more willing to work in inner city areas than white nurses--and that baccalaureate trained nurses are less adverse to working in central cities than AD nurses.*[27]

The National Sample Survey of Registered Nurses, November 1980, found that minorities have high labor force participation rates, so that increasing their access to nurse education appears to be a good investment.[28] The rate for whites was 76 percent, for blacks 90 percent, for Hispanics 86 percent, and for Asian and Pacific Islanders 91 percent.[29] Minority nurses, both RNs and LPNs, constitute a large percentage of the nursing staffs in public general hospitals in the inner city, which serve large numbers of minority patients.

Another major advantage of increasing minority representation in the nursing labor force would be that minority patients could be served by those best able to understand minority cultures and languages. The language problem is particularly acute in states with large Hispanic populations, many of whom do not speak English. Hispanic RNs are scarce. In 1974 a California study found that although Hispanics constituted over 15 percent of the population of the state they were only 1.1 percent of California RNs.[30] In Arizona in 1981, Hispanics were 16.2 percent of the state's population, but only 2.5 percent of the state's RNs and 6.6 percent of its LPNs.[31]

The relative poverty of minority groups, closely associated with their poor health status and lack of access to care, also creates barriers to their attaining nurse education. A number of federal programs have tried to help disadvantaged individuals gain access to nursing education by offering scholarships and loans.

Federal programs to facilitate nurse education for those with disadvantaged backgrounds and to help alleviate shortages in underserved areas include the Special Project Grants and Contracts Program to improve nurse training, authorized by NTA and its various amendments. Currently, two of the five stated purposes of these special grants are to (1) increase nursing education opportunities for individuals from disadvantaged backgrounds and (2) help to increase the supply or improve distribution by geographic area or by specialty group of adequately trained nursing personnel (including nursing personnel who are bilingual) needed to meet the health needs of the nation. The DHHS Division of Nursing awards grants to public and non-profit private schools of nursing and other education organizations. How the educators are to achieve the goals of the program is not specified.

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*Despite the tendency for minority nurses to work in these areas, a sizable proportion do not. The Feldbaum survey, which oversampled for black nurses, showed that 76 percent of respondents had never worked in inner-city areas.[32]

Since 1965, almost 1,000 projects have been funded under the special grants program. (Further detail is provided in Appendix 2.) The current authorization stipulates that (1) not less than 20 percent be obligated for assistance to the disadvantaged and (2) not less than 20 percent go to projects to increase the supply or improve the distribution of adequately trained nursing personnel by geographic area or by speciality group. Again, however, data are not available to show how many students have been assisted by this program.*

The Nursing Student Scholarship Program, although not designed as an effort to improve access to education for those likely to serve in shortage areas, may have assisted that effort more than the programs specifically designed for that purpose. The program was first authorized in the Allied Health Professions Personnel Training Act of 1966 and continued in the Health Manpower Act of 1968, the Nurse Training Acts of 1971 and 1975, and the Nurse Training Act Amendments of 1979. As noted in Chapter III, this program is currently authorized but not funded. Nursing schools administered the program, and could award up to $2,000 per academic year to needy students. Since FY 1970, the program has awarded a total of $139.1 million to nursing schools to provide an estimated 180,502 scholarships.[33] During fiscal year 1974, 79 percent of the 23,700 scholarships awarded went to students from families with incomes of less than $10,000. Of these students, 21 percent were black and 5 percent were other minorities.[34]

The NTA may have had a significant impact on increasing the supply of black RNs. Smith notes that "the number of blacks enrolled in RN programs began to increase dramatically after the enactment of the Nurse Training Act of 1964. . . . From 1965 to 1971, black enrollment increased by about 2,000 students each year compared to an annual increase of about 400 from 1962 to 1965."[35] Nonetheless, by 1980 only 8 percent of the employed nurse population was black and other minority.[36]

The committee believes that low income minority students continue to need both general and specific financial assistance to enable them to enter basic, advanced, and continuing nurse education programs, and that the net effect would be to alleviate the maldistribution of nurses. Because hospitals and other nursing employers control many of the factors that can attract or discourage nurses seeking employment, and because they suffer when they are unable to fill staff vacancies, it is important that they participate in future targeted programs to increase the supply of new nurses in underserved areas. When such nurse employers work closely with nurse education programs in providing clinical experiences for students, they stand to gain a cadre of graduates familiar with the operations of their institution. To the extent that they can offer some assurance that they will hire a number of these graduates, they help create an attractive situation for potential students.

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*Another program, now discontinued, was the Full Utilization of Educational Talent for the Nursing Profession. It provided incentives for special recruitment of minorities and for remedial education. Operational from 1968 to 1974, it was intended to attract students from disadvantaged backgrounds to the nursing profession, and to help alleviate shortages of RNs in underserved areas. Grants were awarded to many types of organizations. The diversity of the approaches used by participating organizations made it difficult to evaluate the program. A substantial number of the targeted individuals now work in underserved areas. Most of the problems addressed by the Full Utilization Program, however, remain unsolved.

## Conclusion

Certain segments of the population are particularly disadvantaged both in their access to health services and in their access to educational opportunities in nursing. Prominently included are minority groups and new immigrant residents of rural and inner-city areas. Strategies to develop manpower to provide more adequate nursing services under these conditions require targeted approaches. Special efforts must be made to reduce financial barriers to nursing education for residents of such areas, to offer reasonable opportunities for future employment in these areas, and to accustom students to the situations they are likely to encounter in providing nursing services in these areas.

In addition to general educational outreach efforts, nurse educators and health care employers can improve access to nursing education in underserved areas by cooperating to develop programs to ensure that students are recruited from minority groups, that they will be given special consideration for employment, and that they gain clinical experience in shortage area facilities, e.g., rural and inner-city hospitals, nursing homes, and public health clinics. Consortia of educational programs and health care facilities may be successful in recruiting such students, attracted by improved prospects of future employment. The facilities themselves may benefit by improved prospects of a continuing supply of newly graduated nurses who live in their area and are already familiar with their operation. Patients will benefit because these nurses are more likely to speak their language and to be familiar with their health needs.

The federal government should, therefore, encourage consortia of nurse educators and nurse employers by offering institutional and student support for educational programs targeted, though not limited, to members of minority and ethnic groups. Opportunities for nurse education at all levels could be offered.

The programs should be designed to ensure that the students, the prospective employers, and the educational institutions all have incentives for making the program successful in recruiting and retaining students most likely to practice in underserved settings, whether urban or rural. After initial funding, the continued support of the programs could be contingent on the success of institutions in reaching shortage areas and encouraging their graduates to serve in inner-city or rural areas. The committee believes that performance incentives to nurse education programs are more likely to succeed than the traditional loan forgiveness or special grant programs of the past, largely targeted directly to the student. Additionally, most committee members believe that the programs should attach service commitment obligations to student aid.*

States should, of course, also play a major role in sponsoring or cosponsoring nursing education targeted to increasing the supply of nurses in underserved areas. Federal initiatives should be offered on a competitive basis and be coordinated with state higher education agencies, health planning authorities, and other organizations that have the explicit responsibility for planning the distribution of nursing education resources to meet the state's manpower needs. They can make major contributions to the screening and evaluation of proposals as well as ongoing results.

RECOMMENDATION 10

To meet the nursing needs of specific population groups in medically underserved areas and to encourage better minority representation at all levels of nursing education, the federal government should institute a competitive program for state and private institutions that offers institutional and student support under the following principles:

- Programs must be developed in close collaboration with, and include commitments from, providers of health services in shortage areas.
- Scholarships and loans contingent on commitments to work in shortage areas should be targeted, though not limited, to members of minority and ethnic groups to the extent that they are likely to meet the needs of underserved populations, including non-English-speaking groups.

## Adequate Revenues for Inner-City Hospitals

As a result of severe resource constraints, some very large inner-city hospitals, particularly tax-supported institutions, have difficulty recruiting and retaining nurses. Constricted revenues limit the abilities of these public hospitals to offer competitive salary structures and to improve general patient services and working conditions. Some factors, such as the location of many public hospitals in deteriorating and unsafe areas, cannot be changed by recommendations within the purview of this study. However, because these institutions serve as the cornerstone of care for the urban underserved, the committee devoted special attention to their problems.

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*Some committee members question the effectiveness of service commitment obligations and their equity.

While some of the burden of caring for uninsured inner-city populations clearly falls upon the private sector voluntary hospitals, the major part falls on public facilities. For example, in 1980, the Greater Cleveland Hospital Association reported that in its area, 5 out of 51 hospitals provided 90 percent of the unreimbursed care. Further, the association noted that 80 percent of all unreimbursed in care in Cleveland was for outpatient, clinic, and emergency services.[37]

In a 1977 report on public general hospitals it was found that they offered important services frequently not provided by other hospitals. On the basis of 1976 data, it showed that in the nation's 100 largest cities, public hospitals represented slightly less than 10 percent of community hospital facilities but provided 45 percent of all ambulatory care visits (i.e., hospital clinic visits for primary care and special diagnostic or therapeutic services). In these cities, the public hospitals also provided more than one out of every four hospital emergency room visits in the community. One-half of all public hospitals in these 100 cities provided neonatal intensive care, one-quarter provided alchohol detoxification services, and one-fifth provided emergency psychiatric care.[38] These hospitals are also often regional referral centers and teaching hospitals. Such factors, combined with the severity of the conditions of the patients they serve, result in high costs--often higher than other hospitals of comparable size in their regions.

Federal and state governments have a substantial responsibility for the quality of care in inner-city public and voluntary hospitals, most of which serve not only the unsponsored poor, but also large numbers of Medicare and Medicaid patients for whom payment of necessary expenditures often cannot be fully recovered because of prescribed limitations. Many of the problems that threaten the financial viability of these institutions are created by decisions made by governments about reimbursement levels and scope of services covered by public programs, as well as by other types of federal decisions or nondecisions, such as those related to illegal immigration.[39] Faced by a worsening economy, upward pressures on public sector spending, and a powerful public mandate to decrease taxes and government expenditures, spending restrictions are imposed on programs that serve the nation's poor citizens--particularly Medicaid, the second largest public sector program.[40]

Hospitals serving minority and Medicaid patients in inner cities are more financially threatened than are other acute care hospitals. The closing of many state mental hospitals and the impending closure of neighborhood health centers in various cities compound the problem. When such closings occur, displaced patients rely ever more heavily on the larger public and voluntary hospitals. Also, as voluntary hospitals fight to retain a mix of patients by payer status, and usually by race as well, they become less able or willing to provide care to increasing numbers of nonpaying patients. So-called "dumping" or transfer of nonpaying patients from private to public hospitals is not a new phenomenon, but it appears to be increasing. Although no national data are available, accounts of individual hospital's experiences have been reported by the media. Cook County Hospital in Chicago, for example, recently experienced an increase of transfers out of private hospitals, from about 125 to almost 400 per month.[41]

Nursing is a particularly serious problem for inner-city hospitals. A 1980 survey of mayors, city council presidents, and city managers of cities with public hospitals reported that next to the high costs of such hospitals the shortage of nurses was the most important health problem they faced.[42] The 12 hospitals and 4 long-term care facilities composing the New York City Health and Hospitals Corporation (HHC) offer a useful illustration. One-third of New York City municipal hospitals have less than 70 percent of the required number of registered and practical nurses. Almost none of the HHC hospitals have sufficient RNs to meet the corporation's own standard for RNs, three-quarters do not have the required number of practical nurses, and over one-half are deficient in nurses' aides.[43]

## Conclusion

Many inner-city public hospitals (county-, city-, or state-owned), as well as some inner-city voluntary hospitals, bear the major burden of serving the uninsured poor. They generally also serve disproportionately large numbers of Medicaid and Medicare patients. Many of these hospitals are teaching hospitals, affiliated with academic health centers, and serve as regional referral centers for very sick patients who require extraordinary inpatient medical and nursing attention. They also provide, on an outpatient basis, a heavy volume of episodic primary care and emergency room services to otherwise medically underserved persons.

Failure of Medicaid and Medicare programs to cover large segments of the sick poor, or to allow payment sufficient for these hospitals to recover their necessary expenses of the poor and elderly they do cover, threatens the existence of this essential part of the nation's health services. It stands in the way of improvements in patient services, physical plant, and general working conditions. It contributes to the traditional difficulties that inner-city public hospitals encounter in recruiting and retaining nurses. In short, Medicaid and Medicare coverage and payment levels are among the reasons that inner-city hospitals have nursing shortages.

The service missions of some hospitals may result in justifiably higher expenses and lower revenues than those in institutions classified as comparable in scope, size, or service. Differential payments can be established to take these factors into account. One approach used in some cases of prospective payment or rate making involves pooled funds established under state auspices (with federal Medicare waivers) in which all payers are required to share equitably in hospitals' unrecovered revenues. Although differential payments cannot assure an adequate nursing supply, they may be necessary to maintain institutional solvency.

As new methods of payment are developed for public and other third-party payors during the coming years, it also will be important to allow for the costs of service and management improvements to redress past deficiencies. Payment systems can be designed to allow for improvements in the working conditions and competitive salary structures (see Chapter VII), and thus promote attainment of more adequate nurse staffing levels.

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RECOMMENDATION 11

> Differential allowances in payment should take into account the special burdens on inner-city hospitals that demonstrate legitimate difficulties in financing services because of disproportionate numbers of uninsured or Medicaid and Medicare patients. Federal, state, and local governments and third-party payers should pay their fair shares of amounts necessary to prevent insolvency and to support acceptable levels of service, including nursing care.

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## Nursing Education for Care of the Elderly

After examining general problems of underservice and special problems of the inner cities, we turn to the largest single population group that suffers from a lack of adequate nursing services--the elderly.

Currently, there are 23 million people aged 65 and over; 18 years from now, in the year 2000, there will be nearly 32 million. The most vulnerable part of this population is growing at a particularly rapid rate. Since 1950 the number of people aged 75 years and over has doubled. This group uses hospital, nursing home and home care services at rates double or triple those of the population as a whole.[44]

Only about 5 percent of the elderly are in nursing homes at any one time, although one in five will be there at some time in their lives.[45] Thus the vast majority of the elderly live at home--alone or with their families--or in residential housing for the elderly. When these people receive nursing care it is in ambulatory clinics, physician's offices, hospitals, and sometimes at home. Many experts on the needs of the elderly believe that their health care is not properly adapted to their special needs. There is a tendency for nurses and physicians alike to inappropriately dismiss treatable symptoms, too often automatically regarding them as part of an inevitable, irreversible process of aging. The result of such attitudes is unnecessary disability and institutionalization. Many elderly could remain at home, or in a less restrictive environment, if a greater emphasis were placed on their special needs, which include attention to preventive care and the active management of both acute and chronic conditions.

The committees' attempts to understand some of the reasons for less than optimal care for the elderly and unnecessary institutionalization revealed that preparation to serve the elderly is rarely emphasized in the education of the health service professions. Most basic nurse education programs fail to provide either theoretical or clinical preparation in geriatrics or long-term care.[46] Even at advanced educational levels such preparation is scarce. In 1977 only eight schools of nursing had graduate programs in gerontology.[47] By 1980 only 20 or so schools offered such education.[48] Reif and Estes suggest that the slow growth of gerontology education may be the result of the limited availability of funds to maintain and develop such programs.[49]

This lack of focus on the elderly during the years of educational preparation may be one reason licensed nurses are not attracted to geriatric care. For example, as noted in Chapter I, only about 8 percent of all employed RNs worked in nursing homes in 1980. The committee believes that if nursing education were to provide special preparation in all of the many aspects of geriatric care, licensed nurses would gain an understanding of the special needs, challenges and rewards of caring for the elderly, and thus become more attracted to employment in all the settings where those people receive care--at home, in clinics, in hospitals, and in long-term care facilities.

In recognition of these problems the Robert Wood Johnson Foundation joined with the American Academy of Nursing in sponsoring the Teaching Nursing Home Program. In 1982, 11 academic schools of nursing received 2-year grants to develop affiliations with nursing homes. The nursing schools are to assume overall responsibility for clinical care of the residents. Faculty will teach students and staff, conduct research, and develop outreach services; nursing students will have clinical experiences in the nursing homes.

## Conclusion

The most rapidly growing segment of the population--the elderly--is a group particularly in need of the many services that nurses can provide. Among the elderly, those who are age 75 and older are the most prone to multiple disabilities and chronic diseases. They use hospital, nursing home, and home care services at rates double or triple those of the population as a whole. Elderly patients are found in almost all health care settings. Their needs range from preventive, acute care, and rehabilitation services that help them maintain maximum independent functioning as long as possible, to care that eases the course of terminal illness and its impact on both patients and family. Nursing students need realistic preparation to dispel common misperceptions about the problems of the elderly. Neither basic nor advanced nursing education programs yet focus sufficiently on academic preparation and clinical experiences in geriatrics.

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RECOMMENDATION 12

> The rapidly growing elderly population requires many kinds of nursing services for preventive, acute, and long-term care. To augment the supply of new nurses interested in caring for the elderly, nursing education programs should provide more formal instruction and clinical experiences in geriatric nursing. Federal support of such efforts is needed, as well as funding from states and private sources.

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### Upgrading Existing Staff in Nursing Homes

Although geriatric care in all settings requires special skills and knowledge, it is particularly important in nursing homes and other institutions caring for the elderly. The multiple health problems of the institutionalized elderly present extraordinary challenges for those entrusted with their nursing care. The average nursing home patient is 78 years of age, has multiple chronic conditions, and is confined to chair or bed. About one-third are severely disoriented and 25 percent have chronic brain syndrome.[50] In 1977, skilled nursing facilities reported that they provided intensive care to almost one-half their patients in the week prior to the National Nursing Home Survey. Yet, the vast majority of nursing care in nursing homes is given by personnel prepared at less than the RN level. In 1977, the last date for which comprehensive information is available, only 22 percent of nursing homes had an RN on duty around the clock, 71 percent of nursing personnel in skilled nursing facilities were aides, 14 percent were licensed practical nurses, and 15 percent were RNs.[51] Aides, generally minimally prepared for their responsibilities, provide six times as much care in nursing homes as do registered nurses, and five times as much care as do licensed practical nurses. They may often perform complex nursing tasks.

No national study has explored the actual tasks RNs, LPNs, and aides carry out in nursing homes. However, a study in Utah elicited the opinions of a panel of nurse educators to determine which of 78 nursing tasks could be safely performed by RNs, by LPNs, and by aides. The panel judged that RNs could perform all 78 tasks, LPNs 72, and aides 51. Survey questionnaires were administered to an RN, an LPN, and an aide in each of 79 nursing homes with reputations for good nursing care to learn which of these specified nursing tasks each category of personnel reported that they in fact actually carried out. The RNs reported that they performed all 78 tasks. So did the

LPNs, including six tasks the panel had judged them unqualified to perform. For example, 33 percent of the LPNs reported that they regulated intravenous flow, 29 percent regulated blood transfusion flow, 26 percent inserted nasogastric tubes, 21 percent prepared and gave intravenous medications; 5 percent started intravenous fluids, and 3 percent started blood transfusions.

In this same study, nurses' aides reported that they performed a far greater number of tasks than those for which the panel had deemed them qualified--74, instead of the 51 specified. For example, 33 percent of the aides reported that they removed fecal impactions, 30 percent counted apical pulses; 25 percent suctioned patients' noses; 11 percent suctioned patients' throats, and 4 percent prepared and gave oral medications.[52] There is no reason to believe that the nursing services provided in Utah's nursing homes differ from those in other states.

For the nation as a whole, various estimates have been made on the basis of professional judgments that indicate serious deficiencies of nurses in long-term care. As described in Chapter II, judgment-of-need model estimates indicate that nursing homes are grossly understaffed. An estimate published by the Administration on Aging indicates that, by 1985, 101,000 FTE RNs would be needed in nursing homes, a substantial increase over the 77,000 FTE RNs employed in nursing homes in 1980.[53,54]

The previous recommendation, which suggested a way of dealing with this problem for future generations of nurses, can ameliorate the problem only in the long run. For the short run, upgrading the skills of current nursing home personnel appears to be urgently needed. One example of a promising program to reach RNs in nursing homes is a project funded by the W.K. Kellogg Foundation in 1981. It provides an interesting example of collaboration between educational institutions and nursing homes. The universities of Arizona, California at San Francisco, Washington, and Colorado have received grants to recruit registered nurses already working in nursing homes. These nurses will become qualified as geriatric nurse practitioners after spending 3 months on campus, followed by 8 months of clinical experience on the job under a physician or geriatric nurse practitioner preceptor.

In-service training or continuing education in geriatric nursing for LPNs, aides, and orderlies has been encouraged to some degree under the NTA Special Grants program. Not less than 10 percent of the $6.2 million FY 1982 funds for special grants was to be spent for projects to upgrade the skills of vocational or practical nurses, nursing assistants, or other paraprofessional nursing personnel.

## Conclusion

The many personnel now employed in long-term care institutions generally have not had adequate preparation in caring for the elderly. The quality of care could be improved by upgrading their education. The magnitude of the problem indicates that financing, program, and faculty resources are insufficient and must be developed in many localities. To do this requires federal encouragement to stimulate further the cooperation of those involved--nursing care providers, educational institutions and other private organizations.

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RECOMMENDATION 13

> Nursing service staffs in nursing homes certified as "skilled nursing facilities" and in other institutions and programs providing care to the elderly often lack necessary knowledge and skills to meet the clinical challenges presented by these patients. Such facilities, in collaboration with nursing education programs and other private and public organizations, should develop and support programs to upgrade the knowledge and skills of the aides, LPNs, and RNs who work with elderly patients. States should assist vocational and higher education programs to respond to these needs. Federal support of such programs should be maintained.

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## Adequate Payment for Long-Term Care

Registered nurses are not attracted to work in nursing homes. Working conditions are poor, salaries are low, and fringe benefits rarely are offered. Root causes generally are agreed to be current lack of insurance coverage for long-term care, and policies governing Medicaid payment. Somers notes that Medicare coverage specifically excludes both preventive services and all but a modicum of long-term care. "The Medicare message to the average patient is clear. 'Get well fast or get lost.'"[55] Private insurance also generally fails to cover long-term care. Even major medical insurance usually excludes care in nursing homes and often limits home care to full-time private duty nursing.[56] Medicaid covers long-term care, but only for the elderly who have completely exhausted their financial resources.

Together, the state medicaid programs provide more than 50 percent of nursing home revenues. Current federal Medicaid standards, embodied in DHHS conditions of participation, require the presence of an RN only for the day shift in skilled nursing facilities (SNFs). (Intermediate care facilities (ICFs) can use an RN or LPN to supervise the day shift.)

The problems resulting from inadequate Medicaid payment for nursing home care are generally recognized. Testimony presented to the Select Committee on Aging of the House of Representatives avers that federal nurse staffing standards in nursing homes, while they are intended to establish only a minimum requirement, have been interpreted by Medicaid programs in some states to represent a maximum limit on licensed nurse hours. Mandatory strengthening of the staffing standards therefore appears to be required to correct this situation, and to avoid penalizing through the payment system those homes that choose to provide more generous services to their patients. More than two-thirds of the nonprofit nursing homes represented by the American Association of Homes for the Aging recommended strengthening the standard to 24-hour coverage by licensed nurses.[57] However, under the current Medicaid reimbursement system, facilities appear to be faced with a choice of paying high salaries to a few nurses or paying low wages to a greater number of unskilled aides.[58]

Full-time RNs per 100 nursing home beds range from 1.2 in Texas to 9.6 in Alaska.[59] As noted in Chapter I, RNs have very little time to spend with nursing home patients--12.5 minutes of RN patient care per day in SNFs, were one to assume that RN time was entirely devoted to bedside care. In fact, most of the RN's time in nursing homes is said to be devoted to administrative and supervisory functions.

Institutional care is, of course, only one component of the elderly's need for nursing services. At any one time, 95 percent of the population 65 years of age or over maintain their own households or live with their families. Many of these people, especially at the higher end of age spectrum, have disabling conditions requiring a certain amount of nursing care. Many elderly patients are in nursing homes because they lack access to home nursing and other services that would enable them to remain at home.

Medicare does not reimburse for nursing services to the homebound unless they are in need of defined "skilled nursing services." Medicaid pays for home health services to the destitute elderly, depending on the scope of each state program's benefit policies. However, the amount of spending for these purposes has been very limited. Up to now, less than 1 percent of Medicaid expenditures have been used to fund long-term care outside of institutions.[60] Recent changes in the law permit state Medicaid programs to obtain waivers enabling them to offer a much wider array of home and community-based services to certain categories of people living at home. These changes, made in the Omnibus Reconciliation Act of 1981 (Public Law 97-35), have stimulated 34 states to apply for waivers as of December 1982. The Health Care Financing Administration had approved waivers in 24 states as of that date.[61]

The movement to strengthen home care services for the elderly received a special impetus from the 1981 White House Conference on Aging. Among some 660 recommendations, those for expanding home health care and other home services received the second highest net score of favorable votes.[62]

In 1979 there were 3,000 Medicare-approved home health agencies employing community health nurses.[63] The number of nurses working in home care agencies increased from 6,600 in 1972 to about 20,000 in 1979. Such agencies primarily, but by no means exclusively, have older people as clients. The new Medicaid waivers are likely to stimulate this sector of demand, provided that sufficient funds are made available for the agencies to offer competitive salaries for RN and LPN home care nurses. One result has already been to strengthen nurse practitioner programs. (Nurse practitioners will be discussed in the section to follow.)

It is evident that changes in the payment levels of federal programs could cause a major increase in demand for both home care and long-term care nurses. It is also evident that an increase in both the amount of licensed nursing care in SNFs and ICFs, and an increase in home nursing services, would immeasurably benefit the elderly population.

## Conclusion

Private insurance rarely offers benefits to cover the costs of health services needed by elderly patients at home or in nursing homes for long-term illnesses and disabilities. Medicare benefits are almost entirely limited to acute care services. Medicaid provides extensive benefits for the destitute elderly in nursing homes, but, in most states, restrictive payments discourage the employment of more than minimal numbers of skilled nursing personnel.

Among the nursing homes certified for payment under the Medicaid and Medicare programs, almost two-thirds of the patients are in homes certified either as a skilled nursing facility (SNF) only, or as some combination of SNF and intermediate care facility (ICF). Patients in such institutions are usually severely disabled or ill, and are frequently disoriented. They often require expert nursing services. Aides constitute by far the largest proportion of nursing service personnel in SNFs and combined SNF/ICFs. Licensed nurses (RNs and LPNs) are responsible for their supervision, as well as for the direct care of patients, for recordkeeping, and for decisions about emergency situations that usually must be made with no physician in immediate attendance. Federal certification requirements call for only minimal RN staffing; e.g, in SNFs a full-time RN on the day shift 7 days per week. Facilities have few incentives to exceed minimal staffing standards. Given the magnitude of the nursing requirements of SNF patients, the committee believes that regulations and payment systems should be modified to advance toward the goal of 24-hour RN coverage.

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## RECOMMENDATION 14

The federal government (and the states, where applicable) should restructure Medicare and Medicaid payments so as to encourage and support the delivery of long-term care nursing services provided to patients at home and in institutions. For skilled nursing facilities, such payment policies should encourage the continuing education of present staffs and the recruitment of more licensed nurses (RNs and LPNs), and should permit movement toward a goal of 24-hour RN coverage.

## Lowering Barriers to Expanded Nurse Practice

The term nurse practitioner (NP) refers to nurses whose education extends beyond the basic requirements for licensure as a registered nurse and prepares them for expanded functions in relation to diagnostic and treatment needs of patients, as well as in primary prevention measures. Most are prepared in certificate programs, but an increasing number are prepared in master's degree programs (Appendix 4). This section of the report highlights the potential of NPs to provide services to underserved populations and especially to care for elderly people.

The National Sample Survey of Registered Nurses, November 1980, reported that there were more than 16,700 nurse practitioners and nurse midwives. As is noted in other chapters, NPs were employed in numerous health care settings. In that year, 5,600 worked in hospitals, 4,000 in physicians' offices (including HMOs), and approximately the same number worked in public health or community health. Together, NPs constituted about 1.3 percent of the RNs employed in nursing. Preliminary data from the Division of Nursing and American College of Nurse Midwives show that as of 1982 the overall number had grown to more than 20,000 nurse practitioners, of whom 2,598 were nurse midwives.

Nurse practitioner programs currently supported under NTA place emphasis on training to meet the particular problems of geriatric and nursing home patients, as well as to provide primary care in homes, ambulatory clinics, long-term care institutions, and other health care institutions. NP traineeship recipients must agree to practice in a health manpower shortage area for a period equal to 1 month for each month of assistance, or to repay the amount of their assistance. In fiscal year 1980 the federal government spent over $2 million on geriatric nurse practitioner training programs.[64]

Nurse practitioners have demonstrated willingness to provide needed services in inner cities and rural communities. In 1977, 23 percent of NPs were employed in inner city settings and another 22 percent in rural areas.[65] Thus, 45 percent of practicing NPs were located in the geographic areas of greatest need. (Some nurse practitioner programs specifically prepare NPs for practice in rural or other underserved areas, notably those at the universities of California, Minnesota, and North Carolina.)[66] The Graduate Medical Education National Advisory Committee (GMENAC) cites data from a 1976-1977 survey indicating that 10 percent of nurse midwives work in communities with populations under 10,000.[67]

Nurse practitioners and nurse midwives, working under established protocols, have proved effective in the delivery of primary care in some settings. Some studies have found that the use of NPs in organized health care settings resulted in productivity gains and cost reductions. For example, Holmes observed that a physician/nurse practitioner team was more productive than a physician working alone.[68] Such augmentation of productivity could help make physician practices in some underserved areas financially viable.

The 1978 Institute of Medicine study on manpower policy for primary care endorsed the use of NPs. That report stated:

> . . . even with the projected increase in the supply of physicians, physician assistants and nurse practitioners have an important role to play in the delivery of primary care. Their role in those rural communities unable to support a physician is of particular importance. In the opinion of the committee, rural communities with populations of 4,000 or less may be adequately and economically served by a physician assistant or nurse practitioner with physician backup. Even in more populated rural communities, they can augment the care provided by the physician so that the patient can obtain needed primary care on a 24-hour basis. In addition, new health practitioners can improve access to primary care in urban settings, especially in hospitals, nursing homes, and as part of a team in a group practice.
>
> Moreover, the committee views these providers as enhancing the delivery of primary care by educating patients to lead more healthful lives. . . By concentrating on communication with patients, (they) might help patients to adhere more closely to prescribed regimens and to assure increased responsibility for their own health. . . [69]

The use of NPs in the care of the elderly has potential for improving the health status of this group. A study reports that an adult health nurse practitioner/physician team delivering primary health care to the elderly reduced hospital days and the use of diagnostic and therapeutic procedures.[70] A Rand study predicts a need for 12,000 to 20,000 geriatric nurse practitioners by the year 2010, depending on the amount of responsibility delegated by physicians.[71] The study indicates that geriatric nurse practitioners could play a significant role in caring for elderly people. Much larger numbers of geriatric NPs have been predicted to be needed by that date in estimates being submitted to the National Institute on Aging.[72]

Two major factors control the extent to which NPs can furnish primary care to underserved populations: (1) NP practice is regulated by state practice acts that define the scope of nursing practice, (2) payment for NP services by federal programs determines the economic feasibility of using NPs. In recent years, many states have amended physician and nurse practice acts to allow new health practitioners to perform some medical procedures under various conditions.* Most nurse practice acts require physician supervision of NP activities;

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*See Habibi, M. Legal issues influencing nursing practice. Background paper of the Study of Nursing and Nursing Education. Available from Publication-on-Demand Program, National Academy Press, Washington, D.C., 1983.

therefore the presence of NPs in underserved areas depends not only on their own interest, but on their ability to make arrangements with hospitals or physicians. Nurse midwives, many of whom practice in rural and urban underserved areas, also must make such arrangements. In recent years, state laws have become increasingly supportive of midwifery practice. The number of states with statutes or regulations allowing nurse midwives to practice is reported to have increased from 16 in 1977 to 32 in 1980.[73]

The level at which nurse practitioners can be used is directly related to the licensing provisions in any given state. State legislators, in considering changes in nurse practice acts and related legislation, usually confer with representatives of the medical profession as well as with nursing groups. There are differences of viewpoint as to practice proposals. For example, physician supervision of NPs may be defined as requiring the presence of the physician at the site of practice. Some critics of organized medicine have observed that economic concerns may influence the attitudes and actions of some medical practitioners, especially in the face of the increasing supply of physicians. However, there also are genuine concerns about the quality of care that might be given by NPs in the absence of a physician. The committee did not attempt to resolve these questions because its recommendation deals only with nurse practitioners functioning in organized settings and in joint physician-nurse practices.

Medicaid and Medicare payment policies affect the ability of ambulatory clinics, physicians, and health care institutions to employ NPs. The Medicaid programs in approximately one-half the states specifically provide some type of reimbursement for physician extender services such as those by nurse practitioners or physician assistants.[74] Federal reimbursement policies in the Medicare and Medicaid programs allow institutions to include physician extender compensation in their calculation of reasonable costs. But federal payments for primary care services, provided by physician extenders outside of institutions, have been restricted. In most cases, services traditionally performed by physicians are not reimbursable under federal programs when provided by physician extenders.[75]

The Rural Health Clinic Services Act of 1977 (Public Law 95-210) eliminated such restrictions in the Medicare and Medicaid programs for physician extenders practicing in certified rural health clinics in designated underserved areas. The Act provides payment for physician extender services even if not directly supervised by a physician. However, where state practice laws require on-site physician supervision, their provisions often appear to govern.

Studies confirm that NPs are willing to provide primary care in parts of rural and inner-city underserved areas where physicians at present do not practice. There is, however, considerable debate on the long-term prospects for using substantial numbers of such practitioners in ambulatory care in view of the increasing supply of primary care physicians. Physicians are increasingly moving into small communities. It is not possible now to project how many nurse practitioners will be needed in the future and where they will practice. GMENAC estimated that the supply of NPs will rise to 39,000 by 1990.[76]

## Conclusion

Continued federal funding is needed for nurse practitioner training. It should, however, be weighted toward supporting the training of RNs most likely to practice in underserved areas, in nursing homes, and in caring for the elderly in other settings. The funding can profitably be directed at training RNs already living in underserved areas or already working in long-term care settings, since they are most likely to continue practicing there.

The legitimate role for nurse practitioners is hampered in many instances by state laws and third-party reimbursement practices. Their services in organized settings and in joint physician-nurse practices should be covered by Medicaid, Medicare, and third-party payers. This does not, however, imply an intention to restrict payment for services that states already authorize. Approximately half the states now provide some Medicaid reimbursement for physician extender services provided by NPs or physician assistants. Since 1977 the Rural Health Clinic Services Act has waived payment restrictions in the Medicare and Medicaid programs under defined safeguards where such physician extenders practice in certified rural health clinics located in designated underserved areas.

There are examples of the use of NPs and nurse midwives in organized health care settings contributing to productivity gains and cost reductions. Even with the anticipated future increases in physician supply, it is likely that NPs will be needed, especially to serve hard-to-reach populations, to facilitate new organizational arrangements for providing health care in cost effective ways, and to augment the quality and amount of care provided to the elderly in their own homes and in nursing homes.

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## RECOMMENDATION 15

There is a need for the services of nurse practitioners, especially in medically underserved areas and in programs caring for the elderly. Federal support should be continued for their educational preparation. State laws that inhibit nurse practitioners and nurse midwives in the use of their special competencies should be modified. Medicare, Medicaid, and other public and private payment systems should pay for the services of these practitioners in organized settings of care, such as long-term care facilities, free-standing health centers and clinics, and health maintenance organizations, and in joint physician-nurse practices. (Where state payment practices are broader, this recommendation is not intended to be restrictive.)

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## Financing Recommended Actions

The committee has presented recommendations in this chapter that would involve redirection and reauthorization of a number of NTA programs designed to alleviate chronic nursing shortages for various geographic areas, population groups, and institutions. These approaches can be grouped as (1) manpower distribution policies to facilitate the education and employment of individuals most likely to work in rural and inner-city areas, including nurse practitioners; (2) payment changes to enable skilled nursing facilities and inner city hospitals to support acceptable levels of service, including more adequate nursing care in such institutions, and to facilitate the employment of nurse practitioners to care for rural and elderly patients; and (3) policies to improve nursing care for the elderly through incentives to educational institutions and health care providers, first by enhancing the geriatric component of educational programs so that new graduates will be more likely to want to work with the elderly and be more skilled in doing so, and second by improving the skills and knowledge of all levels of nursing personnel who already care for elderly people in long-term care institutions.

### Manpower Distribution Policies

The principal recommendation in this category suggests incentives to states, educational institutions, and health care providers to develop consortia and model demonstrations that address specific shortage problems in medically underserved areas. A key strategy is to bring educational opportunities to potential students who already live in those areas. The committee is not suggesting a large-scale program of diffuse student and institutional support as occurred in the past, but rather carefully targeted aid for local initiatives that will attract added local resources.

Past federal expenditures to address nursing maldistribution problems were included among the Nurse Training Act authorizations for loans and scholarships for disadvantaged people, special project grants, and training for nurse practitioners. These loan appropriations peaked at $33.5 million in 1976, at which time $12 million was also available in scholarships. By 1982, the loan program had been reduced to $7.5 million and the scholarship program discontinued. However, many nursing schools still have large cash balances in the loan program, totaling $54 million nationwide, and substantial amounts are owed in delinquent loan repayments, some of which may be repaid.[77] These funds presumably could be retargeted to support a substantial number of loans through 1986 (the end of the period during which the money may be reloaned). In addition, a relatively small amount of new funds for loans targeted to educational activities in underserved areas would speed improved geographical distribution.

Federal capitation (no longer authorized) and special project funds (authorized in 1981 at about $12 million), which had many purposes, have also been used to address problems of underservice. Some of these funds have been used to develop innovative outreach and collaborative programs, recruit disadvantaged students, and improve the distribution of nurses.

In sum, many of the committee's objectives and strategies have been stated among the objectives of past federal efforts, but the impact has at times been lost because of diffuse funding arrangements. Furthermore, inadequate data and poor institutional records have frustrated the evaluation of their impact on the intended problem areas. In view of federal budget constraints, the committee believes that levels of funding as high as in the past may not be feasible or even necessary. Rather, smaller but more carefully targeted expenditures would be effective to develop concentrated approaches to the problems of recruiting minority and other students who are likely to work in underserved settings. The recommended activities to stimulate consortia for underserved areas could be supported by appropriations for special project grants and contracts at about the 1981 level.

In addition to the need for generalist RNs to care for underserved populations, the committee sees a need for nurse practitioners to care for elderly clients and provide primary care in underserved areas. Specific federal support for nurse practitioner education programs has been authorized under the NTA since 1976. Funding was at the $13 million level between 1978 and 1981. Although in recent years special consideration has been given to institutions that prepare nurse practitioners to deal with the special problems of geriatric patients at home and in nursing homes and to serve in health manpower shortage areas, many NPs subsequently find employment elsewhere. NP students have also been assisted by Traineeships for Advanced Training of Professional Nurses. This program supports a whole range of advanced nurse education. It was also funded annually at about $13 million between 1979 and 1981. The committee endorses continued funding at present levels for the education of nurse practitioners, but with stronger program incentives for them to work in underserved areas and in the care of the elderly.

## Payment Changes

Manpower policies address only part of the underservice problem. Perhaps the most important obstacle to adequate nursing care for residents of skilled nursing facilities and patients in inner-city hospitals is in the lack of financial resources in these institutions. The committee has placed no explict price tag on these recommendations because they are part and parcel of major program reforms required in Medicare and Medicaid payment systems to assure that cost constraints are balanced by broad equity considerations. Any added costs are not fairly attributable to nursing, although nursing improvements are intended as one of the results of more adequate payment for total care.

## Improving Nursing Care for the Elderly

Training of all levels of nursing personnel, including aides, LPNs, and RNs, has failed to pay sufficient attention to the special problems of caring for the elderly. We have recommended that educational institutions in collaboration with providers strengthen their curricula to remedy this situation by encouraging more nurses to pursue careers in geriatric nursing. We also see a need for continuing education to upgrade the skills and knowledge of those currently employed in long-term care. Providers and educational institutions should take the lead and primarily bear the costs of developing both these types of educational programs, with additional financing from state agencies and foundations.

The federal contribution to such improvement and to efforts to upgrade the skills of LPNs, aides (nursing assistants), and other nursing personnel has been expressed in the past primarily through the NTA special projects grant program. In the Omnibus Reconciliation Act of 1982, Congress stipulated that not less than 10 percent of special project funds be devoted to upgrading the skills of vocational or practical nurses, nursing assistants, or other paraprofessional nursing personnel. At the same time, however, Congress eliminated from the authority support for curriculum improvements and short-term in-service training for aides and orderlies. The provisions that remain could nevertheless allow for greater federal participation to implement the committee's recommended actions to improve geriatric nursing care. The committee believes that if special project grants were funded at a level equivalent to the average of 1980-1982 appropriations ($11 million), the federal share of the committee's recommendations could be accommodated.

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## CHAPTER VII

# Improving the Use of Nursing Resources

Prompted by a concern that the working conditions of many nurses were driving them out of the profession, or at least out of certain health care settings, Congress asked this study to suggest actions that would encourage retention of nurses. In its review of possible reasons for nurses leaving their jobs, the committee found that management decisions strongly influence the supply of and demand for nurses. Such decisions are major determinants of whether a nurse can expect opportunities for career advancement, and whether the work environment can accommodate the demands of nursing responsibilities. In light of its charge to determine the future need for nurses, the committee was concerned that hospitals might not be doing all they could to maximize the use of the existing supply.

The emphasis in this chapter primarily is on hospitals, the largest employment setting. Because nursing homes and some kinds of hospitals--particularly those located in inner cities and rural areas--face the fundamental financing and other constraints described in the previous chapter, their flexibility in implementing innovations is severely hampered. Nevertheless, they may find the discussion helpful.

### The Effects of Management Decisions on Supply and Demand

The decisions health care institutions make about the nature and volume of their services shape the demand for nurses. These decisions are influenced by technology development, the flow of reimbursement dollars, consumer demand, and the exercise of professional prerogatives in the practice of medicine and nursing. To illustrate, the decisions of many hospitals to open or expand intensive care units, which have high nurse staffing requirements, greatly increased the overall demand for nurses during the 1970s.

Planning of future needs for nurses requires consideration of the variety of skills and knowledge that should be represented in the nurse supply. We have observed that many hospitals appear to be moving gradually toward a greater proportion of registered nurses (RNs) in relation to other types of nursing service personnel (see Chapter II, Table 10) and that the nation's supply of RNs with baccalaureate and advanced degrees is gradually increasing. These developments, coupled with the trend toward educational advancement and recruitment into nursing schools of nontraditional students with a variety of educational and experiential backgrounds, suggest that employers face ever more complex personnel and staffing decisions. In establishing policies that take into account the growing specialization and differentiation among various nursing roles, employers have an important share of the responsibility for creating career opportunities and policies encouraging educational advancement that could be important in keeping nurses in the labor force. Employers also have a strong influence in whether nursing is viewed by potential candidates as a desirable lifetime career.

Because financial constraints probably will limit expansion of nursing education during the remainder of the 1980s, managers must examine how to adapt to local supply conditions without simply calling for additional education slots. This may mean developing strategies to increase the number of hours that part-time nurses work, encouraging inactive nurses to reenter the field, adjusting staffing patterns to make more effective use of current staff, or reducing excessive turnover.

By directing this study to develop recommendations to encourage nurses to remain in or reenter the nursing profession, "including actions involving practice settings conducive to the retention of nurses," the congressional mandate clearly broadened the audience for this report to include not only federal and state governments but also the private sector. Many remedial actions can be carried out only by those who set organizational, management, and personnel policies in hospitals, nursing homes, health maintenance organizations, public health departments, and all other agencies that employ nurses. The activity of the National Commission on Nursing between 1981 and 1983, with its broad representation of health care industry and professional leaders, indicates a heightened awareness among national health organizations of their responsibilities to provide leadership in solving the problems of nursing and nursing education. There is no lack of examples of individual institutional innovations to be explored; the question now is what kind of supporting groundwork must be laid to ensure that important issues remain on the agenda and workable ideas are widely disseminated.[1]

## Job Turnover and Attrition in Nursing

It has been commonly accepted that job dissatisfaction among nurses has resulted in large numbers leaving the profession. It is also asserted that many nurses change jobs frequently, causing excessive turnover in hospitals. Recent national aggregate data do not support these generalizations.

Although approximately 388,000 RNs are not now employed in nursing--about 24 percent of the total 1.6 million licensed RNs--they appear to have dropped out largely for family or other personal reasons, not because of dissatisfaction with their profession. Figure

14 depicts the composition of the pool of inactive nurses. Many of those not employed nor seeking employment appear to have concentrated on raising families or to have retired because of age. Less than 5 percent of the total supply of RNs who are working are employed outside the health field.[2]

Turnover rates, indicating attrition from a particular place of employment, are lower now than they have been in the past. Early studies of nonfederal general hospitals in 1954 and 1962 found RN turnover rates to average 50 percent (a level 3 times that of teachers and 1.5 times that of social workers during the same period).[3] Recent studies estimate that by 1982 the turnover rate had on average fallen to between 20 and 30 percent per annum for full-time RN staff.[4,5,6,7]

For the average RN today, turnover rates do not appear to be any higher than for women in many other occupations. Among all working women, the average tenure per job in 1978 was about the same in the health industry (2.7 years) as in all industries (2.6 years). It was even higher (3.5 years) among professional women in health (presumably mostly nurses) than for women in the nonprofessional occupations (1.6 years).[8]

Nurse recruiters from more than 400 hospitals responding to the annual surveys of the National Association of Nurse Recruiters (NANR)

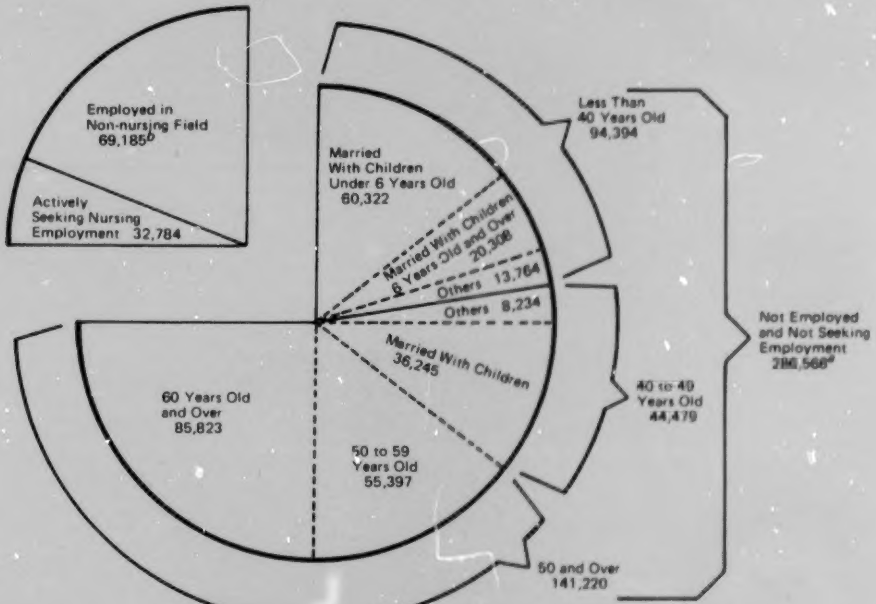

FIGURE 14 Characteristics of registered nurses not employed in nursing, November 1980. SOURCE: From DHHS, HRA. *The registered nurse population, an overview. From national sample survey of registered nurses, November 1980*. Chart 2, p. 7.

report a steady 3-year decline in annual turnover rates: 30 percent in 1980, 27 percent in 1981, and 23 percent in 1982. These self-selected hospitals may be ones with the most difficult recruitment and/or turnover problems, and thus cannot be said to represent a reliable sample of the nation's community hospitals. They nonetheless constitute a sizable group, and they spend an average of almost $100,000 per year on recruitment.[9]

A trend of moderating turnover seems to be confirmed by information from several states. A Maryland Hospital Association survey, for example, shows a drop in turnover of 12 percent over 2 years in the Washington, D.C., metropolitan area, from 36 percent in 1980 to 20 percent in 1982.[10] Recent reports from California indicate a turnover rate in 1981 of 37 percent, apparently higher than the national average, but nonetheless the lowest in the state since 1977.[11] In North Carolina, hospital turnover rates declined from 23.2 percent in 1980 to 22.1 percent by September 1982.[12]

Although poor retention and high turnover in nursing may be less severe than commonly believed, the committee concludes that serious problems exist in the management of nurse resources. National data may mask the problems of individual localities and health care institutions. These problems possibly could be relieved by attention to basic human resource management principles that often are absent from nurse employment and that hamper quality of patient care, productivity, and the attractiveness of nursing as a profession.

The exact reasons for the lessening of nurse turnover rates are unknown. The state of the economy may contribute to it, as may improved management practices in some segments of the hospital industry. In any case, the average turnover rate for hospital staff nurses now appears to be approaching those of non-manufacturing and nonbusiness industries (tax exempt organizations and government agencies), which have average monthly rates of about 2 percent, or an estimated 24 percent annually.[13]

Nothwithstanding these indications of improvement, the committee views turnover as a continuing problem. First, it is difficult to determine whether turnover will continue at current rates once the economy begins to improve and the general reluctance to change employers during a recession dissipates. Second, the costs of turnover to hospitals can be appreciable in terms of the loss of investments in orientation and recruitment, because substantial costs are associated even with a relatively low turnover rate. The American Hospital Association (AHA) estimates that the median yearly costs of recruiting a staff nurse are $526, plus $1,300 for orientation.[14] These costs mount considerably when they are multiplied by the numbers of nurses that must be replaced when turnover is high.

Although the costs of avoiding turnover by paying higher salaries can at times outweigh marginal investments in reducing turnover rates for a hospital, it is difficult to quantify the effect of excessive turnover on quality of care. For example, the resignation of one experienced surgical nurse can seriously diminish the safety and effectiveness of an entire surgical unit. In light of the changing case mix, intensity of service, and growing complexity of hospital organization, managers must learn to recognize, as many successful business enterprises do, the value of experience and thus the importance of low turnover.

Researchers interested in developing a causal model of professional turnover have recently focused their attention on nurses.[15,16] At this stage, the research points to the need for managers to examine more closely their policies with respect to opportunities for continuing education, career advancement, staff assignments, channels of employee communication, workload, and organizational characteristics. All of these factors can affect nurses' perceptions of autonomy and appropriate collegial working relationships with physicians and other hospital personnel.

The importance of these factors also was apparent in testimony and anecdotal evidence received at both the open meeting of this Institute of Medicine committee and the regional hearings of the National Commission on Nursing. Many nurses described a variety of work-related frustrations that affect their attitudes toward their work. Even when they do not result in turnover, high-quality patient care and optimum productivity cannot be achieved if nurses are discontented. Other than for newly licensed nurses, there are no national survey data to delineate the important qualitative aspects of nurses' professional and role dissatisfaction, its nature, and its extent. Available studies often are limited to particular geographic areas, and many have insufficient response rates.

Nonetheless, these studies are useful in that they suggest the types of frustration many nurses experience in their work situations. A review of recent surveys identified factors most frequently cited by nurses: attitude and behavior of nursing managers; limited professional growth, advancement, achievement, and intellectual environment of the practice setting; salaries; schedules; relationships with other nurses; and working conditions characterized by understaffing, lack of recognition, too much paperwork, poor relationships with physicians, an oppressive organizational hierarchy, and little job security.[17] In her critical review of the literature on nursing job satisfaction conducted for the study, Stuart notes that every major study of this issue since the 1960s has pointed to the factors of autonomy, interpersonal relations, and job status as critical components of overall job satisfaction.*

Data on newly licensed RNs, however, indicate that there is no widespread job dissatisfaction among these younger nurses. In 1980, among 47,143 newly licensed RNs who reported to the National League for Nursing annual survey 6 months after initial licensure, 82 percent said they were satisfied and 81 percent believed their skills were adequately utilized. These responses varied only slightly according to the type of educational program in which the respondents had been prepared, and by geographic region.[19] In a study of turnover,

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* For detailed discussion, see G.W. Stuart. Nursing role satisfaction. Background paper.[18]

Weisman similarly found that younger nurses in their first year of employment were less likely to resign than midcareer nurses. She concluded that these more experienced nurses might be persuaded to remain if they had greater promotional opportunities and salary increases.[20]

## Improving Career Opportunities and Working Conditions

Although this study committee cannot find convincing evidence to support the perception that the retention of nurses in the profession or the high turnover rate are problems beyond remediation by the industry, there nonetheless are problems of national importance in the work environment and lack of career opportunities of many nurses. These problems, whether or not they lead directly to high turnover and dropout rates, contribute to the inefficient utilization of the nurse supply and diminish the attractiveness of the nursing profession.

Hospitals in the forefront of change are beginning to respond to nurses' aspirations and the increasing diversity and differentiation of their jobs.[21] However, in general, career opportunities, salary structure, and work environment for nurses are slow to change.

This committee believes it is not in a position to draw conclusions about the relative emphases the industry should place on the criteria of educational credentials, performance, length of experience, and special talents in assigning nursing job responsibilities or making promotions. Even if the research evidence were more convincing than it is at present, the nursing profession and employers of nurses have the primary responsibility to develop staffing standards and implement organizational changes.

There are three problem areas that employers cannot afford to ignore: (1) lack of opportunities for clinical career progression with differential salaries and responsibilities, (2) relatively low salaries except at entry levels, and (3) working environments that limit participation in patient care and institutional decision making and that are characterized by poor interprofessional relationships.

### Lack of Opportunities for Career Progression

Many nurses have had little to lose by changing jobs frequently or by dropping out of work for periods of time, because rewards for continuous job tenure, especially in clinical nursing, appear to be minimal.

Multiple regression analysis of data from the National Sample Survey of Registered Nurses, November 1980, confirms the perception that employers do not pay a premium for experience (Appendix 7). RNs employed full time received on the average only about $140 per year for each year of additional experience (controlling for other variables including educational background, job position, geographic region, race, and sex). However, again holding other variables constant, attaining a graduate degree or pursuing a career path in administration does lead to significant salary differences--average annual salaries are about $2,200 and $6,500 higher, respectively. Also, the rapidly growing number of nurses with positions as clinical specialists are being rewarded with high salaries; controlling for educational background, experience, and other variables, the clinical specialist title is on average worth an additional $3,500 per year.

These determinants of wage differences among nurses with different characteristics are germane to this discussion, but the variables included in the 1980 National Sample Survey do not account for most of the variation among nurse salaries. Other factors, such as the condition of local labor markets and detailed characteristics of employers not revealed by the broad categories of the survey, may explain why some nurses earn more than others.

Too many institutions still view nurses primarily as "job fillers." However, although some nurses may only want jobs, many want careers. Friss identifies three groups of nurses in hospitals. The first, or core group, are committed careerists for whom managers must design an incentive structure that takes into account long-term needs for earnings, tenure, and professional stimulation. The second group consists primarily of part-time nurses who often are perceived as unmotivated transients, but may also be viewed as career negotiators seeking to achieve balance among competing demands in their lives. A third group are potential careerists who may benefit from learning about existing career paths or training opportunities.[22]

Career-oriented nurses present difficult challenges to health care managers but important opportunities as well. They demand educational opportunity for professional advancement and more authority to make decisions about patient care, to develop their own operating policies, and to influence the larger institutional resource allocation decisions that ultimately affect nursing practice. Health care executives should not respond to these pressures merely to pacify nurses on the staff but should take the opportunity to create nursing service departments that reflect the differentiated responsibilities and expertise inherent in managing what sometimes are multimillion dollar nursing enterprises that deliver an impressively wide range of services.

The matching of varieties of expertise to specific jobs in a large health care facility is not easy. It begins with an institutional commitment to incorporate nurses into the senior executive team and continues down the supervisory ladder with nurses who can manage staff effectively. Advanced clinical knowledge is required to manage differing patient needs in most average-sized hospitals. A new combination of management and clinical talents is required to assure accountability for patient care and warrants recognition with new rewards along clinical as well as administrative paths. In many areas, such as long-term care, opportunities exist for members of the nursing profession to take administrative as well as professional leadership.

In summary, nurses, like everyone else, prefer to work in well-managed, fairly predictable environments where they know they can advance in their careers and feel that their professional skills contribute significantly to the institution's mission. By providing an environment where this sense of career can be developed, employers will benefit in the long run. A certain amount of turnover is inevitable, because not all nurses are interested in long-term career progression. However, the committee strongly believes that a cadre of well-qualified nurses committed to institutional objectives can help to improve productivity and quality of care.

Employers are experimenting with a number of techniques to engage and retain career nurses in addition to the salary changes discussed in the following sections. One set of strategies involves restructuring the workplace, not only in schedules and incentives to work less popular shifts or positions, but also in reorganizing the delivery of nursing services in the institution so that patient needs based on severity of conditions are more closely matched to the ability level of the staff.

A second set of strategies is to improve interprofessional relationships. The place of nursing in the management structure can be given a larger voice in resource allocation decisions and in setting hospital policies and procedures. Restructuring in some institutions has decentralized authority and accountability in order to free nurses to have greater autonomy in fulfilling patient needs. Also, attention has been given to physician-nurse relationships both to discover approaches to reducing conflicts and, more positively, to develop collaborative approaches to patient care.[23] Finally, there appears to be an interest in sorting out functional relationships with other hospital workers--nursing assistants, unit clerks, pharmacists, and technicians--to differentiate more clearly the scope of nursing's contribution so that nurses can be employed efficiently.

A third set of strategies is a retention-oriented approach to recruitment that seeks to develop for the nurse a commitment to the institution as well as a career in nursing. Whether a new or an experienced RN is being recruited, opportunities that will enhance clinical expertise and develop other nursing interests could be effective. Management can help RNs realize their short- and long-term professional goals and develop their institutional loyality by assessing each nurse's capabilities, employing them appropriately, and developing individually tailored plans for educational and experiential opportunities. This may include helping nurses with financial support and released time to pursue continuing, certificate, and graduate education. These nurses can also be enlisted by the hospital as an educational resource to stimulate and act as mentors to less experienced nurses.

## Salary

Between 1972 and 1981, earnings of general staff nurses in hospitals did not keep pace with inflation. In real terms (adjusted for changes in the cost of living), salaries declined at an average rate of almost 1 percent per year over the 9 years. The rate was not constant, however. From 1972 to 1975, real earnings declined by 4 percent; between 1975 and 1978 the decline was only 1.6 percent, but steepened to 2.1 percent from 1978 to 1981.[24,25,26] For example, between 1978-1981, although nurses' salaries in dollars increased by 35 percent, their real earnings (i.e., purchasing power) decreased.[27]

However, nurses' earnings grew slightly more rapidly between 1978 and 1981 than the salaries of other hospital employees (Table 30). Table 31 illustrates that staff nurses have improved their salary position in relation to most other hospital workers, but remain below electricians, social workers, and pharmacists. Over this period, nurses in administrative positions have made minimal gains relative to the staff nurses they supervise.

Observers also have questioned the extent to which nurses' salaries fully reflect education, responsibility, and work environment.[28,29] In 1978, general staff nurses working in hospitals earned approximately the same amount per year ($14,270) as did school teachers ($14,200); about $4,000 per year more than all female professional, technical, and kindred workers; and about $1,200 per year more than production workers in manufacturing industries.[30,31] In general, earnings in occupations with a large number of women are lower than in occupations whose incumbents have similar educational backgrounds and age distributions, but who usually are men.[32,33] Data from the 1970 census showed that RNs who worked full time earned $5,603; a person with equivalent educational attainment and median age in a comparable occupation--mathematical technician, in which 95 percent of employees are men--had earnings of $10,331.[34]

In 1981, RNs ranked 15 among the 20 occupations with the highest median earnings for women employed full time. RN earnings of $331 per week followed the highest earners, operations researchers ($422), computer systems analysts ($420), and lawyers ($407)--all of whom lagged behind the top 20 male-dominated occupations.[35]

Recent court cases have raised the issue of equal pay for comparable work. One of these cases involved nurses employed by the city of Denver who brought a lawsuit under Title VII of the Civil Rights Act alleging that male-dominated professional occupations were classified separately from nonprofessional positions, the result being discrimination by sex in determining how wages or compensation were paid. Nurses were all classified together regardless of training, education, and practice. This case was lost, but the issue of equal pay for comparable work remains alive.[36]

Although this discussion does not prove that nurses are underpaid, the question remains whether they receive fair remuneration, and whether nursing will be able to continue to attract enough qualified new members to the profession.

## Work Environment

Surveys over the years have identified many reasons for discontent among nurses, often involving features of the nurse's work environment--internal relationships, scheduling problems, and physical

TABLE 30 Average Hourly Salaries of Selected Hospital Workers in 21 SMSAs, 1975, 1978, 1981.

| Year | General Staff RNs | LPNs | Head Nurses | Supervisor Nurses | Pharmacists | Medical Social Workers | Dietitians | Registered Respiratory Therapists | Maintenance Electricians |
|---|---|---|---|---|---|---|---|---|---|
| 1975 | $5.94 | $4.58 | $ 6.87 | $ 7.67 | $ 8.37 | $ 7.01 | $ 6.22 | $ 5.32 | $ 6.69 |
| 1978 | 7.05 | 5.38 | 8.23 | 9.16 | 9.96 | 7.84 | 7.31 | 6.36 | 7.62 |
| 1981 | 9.53 | 7.17 | 11.31 | 12.46 | 12.71 | 10.05 | 9.35 | 8.64 | 10.16 |
| % Change 1975-1978 | 19% | 17% | 20% | 19% | 19% | 12% | 18% | 20% | 14% |
| % Change 1978-1981 | 35% | 33% | 37% | 36% | 28% | 28% | 28% | 36% | 33% |

NOTE: Total average hourly earnings were calculated from average hourly earnings in each standard metropolitan statistical area weighted by the number of workers in each occupational category.

SOURCES: Bureau of Labor Statistics. Industry wage survey: Hospitals, August 1975-1976 (see Reference 24 for complete citation); Bureau of Labor Statistics. Industry wage survey: Hospitals and nursing homes, September 1978 (see Reference 25 for complete citation); Bureau of Labor Statistics. Industry wage survey report (compilation of 22 area reports which will be summarized and published as a comprehensive report in early 1983).

TABLE 31 Index of Average Hourly Salaries of Selected Hospital Workers in 21 SMSAs Relative to General Duty Registered Nurses' Salaries, 1975, 1978, 1981 (General Staff RNs = 100)

| Year | General Staff RNs | LPNs | Head Nurses | Supervisor Nurses | Pharmacists | Medical Social Workers | Dietitians | Registered Respiratory Therapists | Maintenance Electricians |
|---|---|---|---|---|---|---|---|---|---|
| 1975 | 100 | 77 | 116 | 129 | 141 | 118 | 104 | 90 | 113 |
| 1978 | 100 | 76 | 117 | 130 | 141 | 111 | 104 | 90 | 108 |
| 1981 | 100 | 75 | 119 | 131 | 133 | 105 | 98 | 91 | 107 |

NOTE: Total average hourly earnings were calculated from average hourly earnings in each standard metropolitan statistical area weighted by the number of workers in each occupational category.

SOURCES: Bureau of Labor Statistics. Industry wage survey: Hospitals, August 1975-1976 (see Reference 24 for complete citation); Bureau of Labor Statistics. Industry wage survey: Hospitals and nursing homes, September 1978 (see Reference 25 for complete citation); Bureau of Labor Statistics. Industry wage survey report (compilation of 22 area reports which will be summarized and published as a comprehensive report in early 1983).

aspects of the work setting.[37] Without belittling these factors, attention should also be paid to more fundamental problems. Aydelotte identifies the basic need for organizational rearrangements both at the nursing department level and at the institutional level. She observes that the purpose of change within the nursing department should be to improve nurse-to-nurse relationships, nursing image, and the nurse's own feelings about work and its organization and her own self worth. At the institutional level, the purposes of change are to enhance communication, to bring many points of view to bear on problems, to integrate a wider set of opinions and knowledge on problems, and to utilize the expertise that nurses have to offer.[38]

There is, therefore, a need to develop the capacity of health care institutions and nurses to address issues in a mutually satisfactory manner. It must be recognized that some characteristics of nursing, particularly in hospitals, are inherently difficult. These include the close working proximity of occupations that have conflicting professional norms and perceptions, the requirements of 24-hour coverage, services entailing life-and-death decision making, and the complicated regulatory and financial pressures that shape institutional resource allocation.

These problems are manifest in different degrees in different institutions as well as different units of the same facility. A challenge to managers is to reconcile the concerns of nurses fairly with the realities of providing hospital services within the limits of resources. In some instances, this reconciliation process may be forcefully placed on management's agenda by nurses' organizing into a union, which has been described as a response to their "inability to communicate with management and their perception of authoritarian behavior on the part of management."[39] In other instances, hospitals have created structures that enhance employee management principles of communication and a sense of participation in the decisions that affect the nurse's daily worklife.

The work environment has been referred to consistently throughout this chapter as a key factor in whether nurses remain in a particular facility or in the practice of nursing. Although the focus has been on the RN and to a lesser extent the LPN, a small but growing body of labor union literature suggests that the problems identified and voiced by the RN population are echoed among all levels of nursing and ancillary personnel. Sexton has identified "eleven S's" in her analysis of work-related issues affecting nonprofessional personnel. The issues repeat those identified for RNs: security, staffing (and speed-up), scheduling, stress, safety, sick-time, sexism (and segregation), step-up (promotion and upgrading), supervision, schooling, and speaking out.

The issues identified, except for sexism, are those common to any labor movement. What this suggests, however, is that unless management deals with the issues in a way that is perceived as responsive to the employees' needs, union activity may increase as it did in industry when management was seen as unresponsive. Women have not historically been readily organized, but societal changes and a push to the health care industry by organized labor may change the character of management/labor relations in the 1980s, and subsequently the supply and utilization of RNs and all other health care manpower.[40]

In summary, the problem of the work environment is not simply a collection of static grievances, nor is it any one characteristic of the work situation, such as lack of autonomy. These are aspects of the larger problem of nurses who are inadequately prepared to function in bureaucratic organizations that are themselves not structured to cope adequately with a cadre of professional employees performing under a variety of stressful conditions.

## Inactive and Part-Time Nurses

Over the past two decades certain geographic areas, certain segments of the health care industry, and many health care institutions have had difficulties in attracting and retaining nurses. Others have not experienced such problems. Over this same period there have been wide swings in the general perception of national availability of nurses. Even during the course of this study, the labor market outlook in some areas has changed dramatically from one of severe nurse shortage to licensed nurses having difficulty finding jobs.

In times of perceived widespread shortage, the health industry has focused its attention on the capacity of the educational sector to produce greater numbers of nurses. Depending on particular local circumstances, new investments in nursing education may be warranted; however, new graduates are not the only means of increasing the effective supply of nurses.

Even though labor force participation rates for nurses are generally high, hospitals and other employers experiencing chronic shortages may not be taking full advantage of various techniques to make better use of the number of nurses in the existing supply. Part-time nurses can be encouraged to work additional hours, and inactive nurses can be persuaded to return as part- or full-time employees. There has been a failure on the part of many health care facilities to diagnose correctly the causes of their specific vacancies and to select the appropriate remedies. Generally, this requires addressing some common barriers to greater participation of nurses in the labor force, including nurses' family responsibilities, lack of sufficient economic rewards, lack of sufficient noneconomic rewards, and out-of-date knowledge and skills of nurses who have been inactive.

The committee does not wish to suggest that part-time work is dysfunctional in itself; in fact, it meets the needs of many nurses and employers alike. However, when the labor force is not sufficient, it may be the fault of employer practices that discourage nurses who might otherwise work more.

A higher proportion of licensed RNs work than do women in general (and that proportion increased from 70 percent in 1977 to 76.4 percent in 1980), but one-third of licensed RNs work only part time and there is a pool of 388,000 inactive RNs. Figure 14, presented earlier, depicts the composition of this inactive pool with regard to age, marital status, and presence of children in the home. Among LPNs, the most recent inventory (1974) revealed that 76 percent were employed in nursing.[41]

In a survey of more than 5,000 nurses in six states, Feldbaum examined self-reported longitudinal information on labor force participation. The median age of the nurses in her sample was 43 years. More than half of the respondents (56.4 percent) had been employed as RNs for over 75 percent of the years since their graduation; only 7 percent worked 25 percent or less of their careers. Forty-two percent had no career interruptions. Almost 65 percent spent more than half of their careers working full time. Few nurses had been perennial part-time employees. Only about 7 percent spent more than half their work life in part-time employment. In general, as noted in the previous chapter, black nurses had more continuous and full-time labor force participation than white nurses.[42]

Roughly one-sixth of inactive RNs--a total of 60,000--had children under 6 years of age present in the home. In addition, there are at least twice that number of married RNs who have children and work part time.[43] To the extent that these family responsibilities act as a barrier to entering the labor force or increasing hours worked, this pool of nurses may respond to child care incentives. Another large segment of the inactive RN pool (25 percent) in 1980 was nurses between the ages of 40 and 60.[44] This group conceivably could constitute another potential source of increased supply.

The extent of influence of young children on a nurse's labor force participation could be overstated unless other variables are taken into account. Therefore we performed a multivariate analysis of data from the National Sample Survey of Registered Nurses, November 1980, to measure the effect of the presence of children in the home, controlling for educational background, marital status, student status, sex, race, age, geographic region and length of experience (Appendix 7). The analysis revealed that the presence of children under six significantly reduces the probability of a nurse's working full time and substantially increases the probability of her working part time or not working.

This analysis also confirmed the influence of age in nurses' labor force behavior. Irrespective of educational background, race, sex, geographic region, and length of experience, the older the nurse, the greater the likelihood of being inactive. However, it is important to note that nurses with more than 10 years of work experience, regardless of age, are much more likely to be in the labor force today, and working full time. Therefore policies that encourage continuous attachment to the labor force by younger nurses, albeit on a part-time basis, would enhance the likelihood of their working full time in later years.

A nurse's decision to reenter the labor force or to move from part-time toward full-time work is strongly affected by considerations of salary and benefit structure. The perception that these factors are important is widespread and has encouraged responses by some employers.[45,46,47] For example, some employers have taken into account the problem of overlapping fringe benefits in dual-earner families (over 70 percent of nurses are married) by allowing nurses to choose cash or selected benefits.

Indicative of both nurses' and employers' interests in seeking new hiring arrangements is the growth of temporary service agencies, which now appear to have peaked at placing about 37,000 nurses.[48] Through these organizations, nurses can earn higher salaries, choose their schedules, and not be subjected to the organizational stresses imposed on a permanent employee in a particular hospital or on a particular floor. Hospitals use temporary service agencies to put nurses in hard-to-fill positions, temporarily paying a higher wage but avoiding salary increases to permanent employees; to circumvent personnel freezes; to adjust staff size to occupancy levels; and to make up for planned and unplanned absences of the permanent staff.[49]

Whatever the merits or disadvantages of temporary agencies, concern about their overuse and their costs has led to other arrangements. Some hospitals have developed flexible work arrangements that resemble in-house temporary agencies. In these, part-time nurses can work as regular employees of the same hospital on an on-call basis or in a "float" pool, and full-time employees can increase their earnings by moonlighting at their own hospital rather than through an agency.

A further barrier to reentry into the nursing labor force is out-of-date knowledge and skills. This problem increases with the amount of time away from nursing. Feldbaum reports that when nurses in her survey left the labor force, most of them remained out for 5 to 5 1/2 years, generally during the time they rear children to school age.[50]

The more rapidly health care technology changes, the more difficult it will be for many inactive nurses to remain current with the advances in their profession. Hunt found that middle-aged RNs returning to work after childrearing were likely not to accept the challenge of hospital employment. However, he estimated that the probability of working in a nursing home increased about eightfold with the accumulation of 20 years out of the labor force.[51]

An insufficient aggregate supply of nurses is not at the heart of many employers' problems; rather some nurses are unwilling to work on particular shortage shifts and units under the conditions currently offered them. Clearly, paying the shift differentials sufficient to fill these vacancies may require hospitals and their boards to determine whether they wish to make the necessary trade-offs. Ultimately employers must bear a large part of the responsibility for meeting their own nursing service needs.

Historical trends favor the improved utilization of the existing supply. Labor force participation by RNs has been steadily improving. In 1949 only 59.3 percent of the total RN population was employed in nursing; the rate rose to 67.5 percent in 1966 and 76.4 percent in 1980.[52] Also, the average number of hours RNs worked per week rose slightly between 1977 and 1980, both for full-time and part-time nurses.[53]

Although it is difficult to distinguish the contributions of management practices to these trends of changing professional, economic, and social values, the committee believes that employers' actions offer the greatest possibility for maintaining adequate nurse staffs. The specific measures listed below merit serious consideration, especially by those health care institutions with severe recruitment and retention problems:

- child care facilities and arrangments for the care of other dependents, especially during hours when private care is difficult, such as nights and weekends
- work schedules adapted to the personal needs of nursing staff
- improved salary structures in the context of an overall strategy to improve productivity and rationalize the use of the hospital's nursing resources
- fringe benefit options so that nurses can select those most appropriate to their needs
- special educational opportunities for nurses wishing to prepare themselves for reentry into active practice.

After reviewing numerous published descriptions of innovative projects that health care institutions have undertaken, the committee believes that the kinds of actions listed above hold the greatest promise for enhancing labor force participation. This does not signify that there are no other useful incentives available, nor that the strategies identified do not have drawbacks. Rather, they appear to lower the most prevalent barriers to employment.

## Child Care

Among a sample of RNs who received their first licenses in 1962 and who were not working 10 years later, the great majority (77.6 percent of associate degree (AD) nurses, 85.4 percent of diploma nurses, and 83.4 percent of baccalaureate nurses) cited as a reason responsibilities for raising children.[54] A substantial portion of the inactive and part-time supply of nurses had children at home under the age of six. Although the federal tax law currently provides deductions for child care, the amount may not be sufficient to make a meaningful difference for nurses, given their salary levels and special requirements for day care. Traditional day care may not meet the needs of nurses who often work other than traditional office hours. Both the AHA and the National Association of Nurse Recruiters (NANR) report that only about 6 percent of hospitals offer child care facilities.[55,56] To the extent that family responsibilities act as a barrier to greater labor force participation, employers should consider the potential costs and benefits of establishing child care facilities singly or in concert with others in the community. Factors of cost include the scope of operation, contracting with local centers, transportation systems to community facilities, in-hospital versus adjacent facilities, extent of subsidization by the employer, and allocation of priorities among types of nursing service personnel.

Benefits to the institution could include enhanced ability to recruit and retain nurses (particularly during shifts difficult to staff), reduction in absenteeism, and improved morale. However, no careful evaluation has been made of the degree to which child care benefits contribute to influencing reentry into the market. It is conceivable that the major effect in any particular community would be to entice nursing personnel from other institutions rather than attracting back to the labor force nurses who had become inactive.

## Flexible Scheduling

Hospitals are experimenting with various ways of staffing that permit nurses to work schedules adapted to their personal needs. Examples include three 12-hour shifts per week; optional 10-hour shifts for evening and night shifts--4 days one week, 3 the next; and "mothers' hours"--shifts ranging from 4 to 7 hours with reduced weekend commitments. The NANR reports that a majority of its members (79 percent) in 1982 offer some form of flexible scheduling--an increase of 11 percent from the previous years.[57]

Although use of flexible scheduling alone may encourage reentry or increased work hours, hospitals often are combining these incentives with compensation packages, such as a full week's wages for reduced hours on the weekends. In these instances, managers may be faced with a trade-off between fulfilling their most pressing staffing needs and incurring increased costs and possible overall reductions in total RN hours worked.

Institutions should monitor these effects to determine whether such measures attract more reentrants or reduce the effective nursing service supply.

## Improved Salary

Employers should consider increasing salary levels in order to attract inactive nurses into the labor force and to encourage part-time nurses to work more hours. Economic research has shown consistently that nurses' rates of labor force partipication increase with salary levels.[58,59,60] Thus, higher salaries could be expected to bring some inactive nurses into the labor force, with an increase in the effective supply.

Nurses who already are working may also increase their hours of work in response to higher pay, as has been found by some researchers.[61] However, when salary levels become high enough, some individuals may decide to reduce their hours of work in order to spend more time with their families or to enjoy more leisure time, a phenomenon characterized by labor economists as the "backward bending" labor supply curve.[62] One recent study has detected this phenomenon in nursing.[63]

The higher a nurse's earnings, the greater the cost of not working. Thus, in general it can be expected that salaries can be one of employers' most effective ways of encouraging nurses to remain in the labor force. In addition, salary levels serve as signals of potential earnings to persons considering a career in nursing, and thus play a role in recruitment and long-term supply as well.

### Fringe Benefits

In the process of reexamining salary structure policies, employers also should take into account the potential of creative fringe benefit packages in attracting nurses into the labor force. For example, by offering a program of so-called "cafeteria benefits," various segments of the inactive supply may be reached. These could include married nurses whose husbands already are entitled to family coverage for health insurance, or nurses who might value educational benefits more highly, as well as those who would prefer to take their benefits in cash. Again, employers must weigh the administrative costs--both in terms of dollars and personnel management issues--against the presumed benefits.

### Reentry Education Opportunities

The National Commission on Nursing noted in its 1981 Preliminary Report that, although surveys have indicated that a lack of refresher courses is often cited by inactive nurses as a reason for not returning to the labor force, such programs have not proved cost effective in some settings and do not result in a high rate of return to employment. Carefully targeting programs to those who drop out of nursing during childbearing years and basing programs in the college-level system are factors that could improve their success.[64]

### The Special Problems of Nursing Homes

As was mentioned in the beginning of this chapter, nursing homes face many of the same management problems as hospitals. However, because of the weak financial revenue position of many of such homes, nurses must work for 20 percent lower pay and fewer fringe benefits than are offered by hospitals. While opportunities for professional satisfaction can often outweigh the lure of higher wages, nursing homes--with their reputation for the isolation that understaffing produces and limited freedom to control the kind of nursing practice in the institution--are, not surprisingly, viewed as low-status work settings by many registered nurses.[65]

Until there is more progress in addressing the financing and educational issues of care for the elderly, discussed in Chapter VI, there will be low effective demand by nursing homes for nurses. Nursing homes will continue to have difficulty offering quality professional nursing services. In the interim, nursing home managers who wish to enhance their ability to retain the nurses they currently employ should take note of a recent survey of nurses in North Carolina. Availability of innovative scheduling plans permitting predictable work schedules was a major factor cited by nurses for remaining in the institution's employ.[66] Although reimbursement constraints may prevent managers from addressing the major reason cited for resignation--low salaries--attention to the employee's personal needs, such as in scheduling, may yield improvements in retention.

## Conclusion

Although nurses in the aggregate neither leave their profession in greater numbers than other women nor leave their jobs more frequently than people in other professions, there nevertheless are large numbers of employers with chronic nursing vacancies and a high turnover rate. These managers can act to make their hospitals more attractive to nurses. First, they should look to some of the traditional management practices that detract from nursing, such as lack of career and pay advancement. Employers should develop new practices that will act as incentives for nurses to stay. Second, employers should investigate whether the introduction of flexible scheduling, novel benefit packages, child care assistance, or other measures would persuade inactive nurses back to work and part-time nurses to increase their hours. Efforts of this sort will, the committee believes, both improve the quality of nursing care by addressing sources of discontent, and enhance the image of the profession, thus attracting greater numbers of good candidates into nursing.

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### RECOMMENDATION 16

The proportion of nurses who choose to work in their profession is high, but examination of conventional management, organization, and salary structures indicates that employers could improve the supply and job tenure by the following:

- providing opportunities for career advancement in clinical nursing as well as in administration
- ensuring that merit and experience in direct patient care are rewarded by salary increases
- assessing the need to raise nurse salaries if vacancies remain unfilled
- encouraging greater involvement of nurses in decisions about patient care, management, and governance of the institution
- identifying the major deterrents to nurse labor force participation in their own localities and responding by adapting conditions of work, child care, and compensation packages to encourage part-time nurses to increase their labor force participation and to attract some inactive nurses back to work.

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## Accounting for Nursing Services

The committee is well aware that its recommendations for management reforms have associated costs. There are several ways in which increased costs could be met. First, they may be reflected in higher costs to patients and third party payers, but that is becoming more difficult in the present climate of cost containment. Second, allocation of resources in the hospital could be shifted, under the assumption that the institution is willing to favor the nursing service department. Finally, nursing service departments could rearrange patterns of staffing and assignments to raise productivity without claiming a greater proportion of the hospital budget.

Nursing services in health care institutions, particularly hospitals, traditionally have been treated as an undifferentiated component of a daily cost or charge that covers room, board and other expenditures, as contrasted with other services that contribute to revenue generation. As a result, there has been little incentive to devise accounting systems, payment formulas, and management structures that attempt to identify the true value of bedside and other identifiable nursing services.

In the present period of rapidly rising costs, new methods of payment will be adopted to force greater institutional efficiency and effectiveness. Although it is unclear how hospitals will respond, the current structure of accounting for nursing services in a provider's budget does not permit any rational basis for arriving at allocations of expenditures or revenues that take nursing into account as a distinct, major component of the hospital's activities. Without such useful management information, hospitals will be in a poor position to bargain with rate-making authorities or with purchasers of care over appropriate payment levels, and cannot make the most effective resource allocation decisions.

Because very few experiments have been conducted with new accounting or payment methods that account separately for direct nursing service costs, the organizational effects and possible unintended consequences of such changes are unknown. At least three presumed benefits can be mentioned. The first is that nurse autonomy will be enhanced. The second is that such an approach would permit sophisticated managerial analysis of approximately one-third of hospitals' costs and would facilitate managerial changes to place responsibility upon the professional staff that provides the services. Finally, the acceptance of such an approach would permit the examination of the effect of reimbursement or payment patterns on nursing practices and particularly on the quality of nursing services.

Although there is reason to believe that these benefits will be realized, there are potential pitfalls. The allocation of resources to nursing could be reduced once costs are identified and rates negotiated on the basis of such data. Specific measures to overcome turnover, enhance career opportunities, and make other positive (but costly) innovations could be inhibited.

New cost containment approaches such as the diagnosis-related group (DRG) hospital reimbursement method implemented in New Jersey and in some other states and localities, and now being proposed for

Medicare, are calling attention to the need for nursing service administrators to understand resource allocation issues better. The management team representing nursing, the medical staff, administration, and ancillary departments are encouraged to establish less costly combinations of services to treat specific medical problems. During this process, nurse managers are being asked questions for which present management information and accounting systems are inadequate. These include the following:

- Is the skill mix of the staff too rich in the number of professional nurses employed?
- Is the department overstaffed for the patients treated?
- Do professional nurses devote too much time to indirect duties?
- Does the nursing budget carry expenses incurred by housekeeping, dietary, and other departments?
- Can RNs be freed from some tasks by well-trained LPNs or technicians?[67]

A method for accurately assigning costs to different nursing functions, units, and even specific patients would help in answering many of these questions. In the absence of some greater operational experience and evaluation of effects, the committee conditionally endorses the concept of separate cost/revenue centers for nursing, but strongly recommends additional experimentation and assessment.

## Conclusion

As cost containment pressures force hospital management to become more skilled at using resources productively, it becomes important that managers have the tools to allocate nursing costs accurately and to develop a system whereby people at all levels of management are responsible for using the nursing staff most effectively. To achieve these goals, management needs information on methods of measuring patient severity of illness and associated nursing costs, which today are not sufficiently refined for widespread implementation.

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## RECOMMENDATION 17

Lack of precise information about current costs and utilization of nursing service personnel makes it difficult for nursing service administrators and hospital managers to make the most appropriate and cost effective decisions about assignment of nurses. Hospitals, working with federal and state governments and other third-party payers, should conduct studies and experiments to determine the feasibility and means of creating separate revenue and cost centers for direct nursing care units within the institution for case-mix costing and revenue setting, and for other fiscal management alternatives.

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## CHAPTER VIII

# Advancing Research in Nursing and Getting Facts for Manpower Planning

The federal government traditionally has assisted the states, universities, and industry in the support of research, in the dissemination of its results, and in the provision of reliable, timely information on matters of common concern. The committee's observations and recommendations as to the import of these kinds of federal activities for nursing services, nursing education, and nurse manpower planning are set forth in this chapter.

### Improving the Nation's Nursing Research Capacity

In the course of efforts to identify the types of nurses required to fulfill specialized functions in the future, the committee investigated the quantity and professional distribution of graduates of higher education programs, as requested by Congress. The committee heard testimony expressing deep concern about the current and future level of nursing research to improve patient care. Data support the contention that the nursing profession's capacity to undertake research is hampered by insufficient support both for the education of qualified researchers and for current work in research.

Of the 1.2 million employed nurses in 1980, fewer than 3,000 had a doctoral degree, the generally accepted credential for advanced research skill.[1] The doctoral degree also is widely considered to be a prerequisite for success in competing for research funds, yet less than 6 percent of doctorally prepared nurses reported research as their primary activity.

As described in Chapter V, there are 24 doctoral programs located in nursing programs in 18 states. The limited number of programs located in nursing departments that can attract nurses interested in pursuing advanced education is only one part of the problem. An additional disincentive for scientifically inclined nurses to commit themselves to a career in nursing research is the paucity of funds available to support it. Federal programs, such as the National Research Service Awards and the former Nurse Scientist Training Program that support predoctoral and postdoctoral fellowships, have not provided a stable funding base for research training. Although there are a number of sources of support for nursing research, none is large. From 1977 through 1981, for example, only $5 million was earmarked annually for nursing research through the Division of Nursing in the Health Resources and Services Administration (HRSA), which principally is a nursing manpower unit of the Department of Health and Human Services (DHHS). This dropped to $3.4 million in 1982. Nursing research is eligible to compete with other disciplines for funds from the National Institute of Mental Health, National Science Foundation, National Center for Health Services Research, and other agencies. The amounts of awards for nursing-related research under these programs are not known but are believed to be relatively small. Nurse researchers suffer from various competitive disadvantages, including the fact that nursing is not well represented in peer review committees, and that the subject matter may not be of prime interest to other reviewers.

The funding of research generally has long been considered an appropriate federal government activity when its discoveries hold promise of contributing to the general welfare and when private sources of funding are likely to be inadequate. Nursing research, as all other health care research, is conducted in order to contribute to the public good. It is the nurse, for example, who will prove crucial to the resolution of such clinical problems as complications associated with prolonged bedrest, the control of nosocomial infections, and adherence to treatment regimens (Appendix 8). Solutions for these and similar problems would inform nursing and other health care practice and could lead to a reduction in the federal health care bill by lessening the length of hospital stay, minimizing the need for additional treatment, and preventing unnecessary or premature institutionalization in long-term care facilities.

## Elevating the Organizational Base of Nursing Research

A substantial share of the health care dollar is expended on direct nursing care, yet the professionals who deliver this care work without the benefit of a strong organizational base to stimulate and support scientific investigation in their field. The committee believes that a center of nursing research is needed at a high level in the federal government to be a focal point for promoting the growth of quality nursing research. Such action would provide necessary leadership to nursing research and expand the pool of experienced nurse researchers who can become more competitive for general health care research dollars. It would also promote closer interaction with other bases of health care research.

Various organizational possibilities for a nursing research center were considered. The structure of the nation's biomedical research enterprise is currently under review. The committee believes this a timely moment to add to this review considerations of the need for a stronger locus for nursing research. Some committee members favored the establishment of an institute of nursing research within the National Institutes of Health (NIH). Others questioned the wisdom of adding new units to NIH. The committee considered alternative proposals, such as having the director of NIH appoint a broadly representative expert task force to recommend priority areas for investment in nursing research. Such a task force could also suggest the appropriate organizational locus for such research and recommend the level of funding. However, all agreed that the goal should be an entity for nursing research at a level of scientific credibility that would provide impetus toward the initiation, coordination, monitoring, and dissemination of clinical and operational nursing research in academic and other research centers throughout the United States.

### Conclusion

Despite the fact that nurses represent the largest single group of professionals in the provision of health services to the people of this country, there is a remarkable dearth of research in nursing practice. The lack of adequate funding for research and the resulting scarcity of talented nurse researchers have inhibited the development of nursing investigation. The federal government's specific nursing research initiative--in grants administered by a manpower unit in DHHS--is not at a level of organizational visibility and scientific prestige to encourage registered nurses to pursue careers principally devoted to research of the direct applicability to patient care problems that nurses confront. With adoption of the principles underlying this recommendation, the committee would foresee a doubling of the level of average 1977-1981 support over the next few years.

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### RECOMMENDATION 18

> The federal government should establish an organizational entity to place nursing research in the mainstream of scientific investigation. An adequately funded focal point is needed at the national level to foster research that informs nursing and other health care practice and increases the potential for discovery and application of various means to improve patient outcomes.

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## Comparative Competencies of Registered Nurses With Different Educational Preparation

Other sections of this report have noted differences and similarities in the career pathways of RNs who receive their educational preparation in diploma, associate degree (AD), and baccalaureate programs. Chapter IV called attention to the dearth of reliable information showing the nature and extent of differences in the performances of such RNs. Taken together with the lack of systematic analysis of the various nursing education programs' curricula, the efforts of nurse educators and higher education authorities to plan articulated programs for RNs working toward baccalaureate degrees are handicapped. Lack of information about knowledge and performance differentiation also handicaps nursing service administrators who seek to place new graduates in positions commensurate with their knowledge, skills, and capabilities for nursing assessment, planning, judgment, and direct patient care. As discussed in Chapter II, reports of nursing studies in many parts of the nation indicate that state and private higher education authorities need such information to assist them in decisions on how to allocate scarce dollars among competing nursing education programs. Many such studies have been constrained in making recommendations by uncertainties concerning the most effective mix and allocation of nursing personnel.

The only national study to date that has provided empirical evidence on the comparative performance of graduates of the three types of programs that prepare for RN licensure is an analysis of the scores of 64,761 candidates who took the standard national licensing examination in 1977.* The candidates were graduates of approved schools of nursing who took the examination for the first time. As Table 32 shows, results for the graduates of baccalaureate degree, AD, and diploma programs were analyzed separately according to their scores in the five clinical areas of the examination: medical, psychiatric, obstetric, surgical, and nursing of children. The mean scores of the candidates from the three programs and the ranges of these scores are displayed in Table 32. In psychiatric nursing, baccalaureate candidates achieved higher mean scores; diploma candidates achieved higher mean scores in the remaining areas.

The table also shows very wide ranges of candidates' scores within each of the three categories of educational preparation. This suggests that there may be considerable variability among the individual programs within each major type, and in the capabilities of the students they graduate.

Licensing examinations test only specific areas of knowledge thought to be necessary to ensure that the public's health, safety, and welfare will be protected. It can be reasonably argued that the scores from such examinations may not reflect capacity to perform in the less easily measured kinds of nursing competence that become increasingly important in subsequent practice. For this, measures of the comparative performance of practicing RNs are required.

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*The national licensing examination for licensure of RNs, known as the State Board Test Pool Examination (SBTPE), evolved in the 1950s and has been periodically revised. The latest version was introduced in July 1982. The examination is currently conducted under the auspices of the National Council of State Boards of Nursing. Scoring is standardized, but until 1982 each state determined its own minimum passing score. As of 1982, there are no longer separate scores for different parts of the test; a single score is provided.

TABLE 32 Scores on the 1977 Licensure Examination of Candidates from Diploma, Associate Degree, and Baccalaureate Degree Programs

| Type of Program | Number of Candidates | Medical Nursing | | Psychiatric Nursing | | Obstetric Nursing | | Surgical Nursing | | Nursing of Children | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Mean | Range | Mean | Range | Mean | Range | Mean | Range | Mean | Range |
| Baccalaureate | 19,078 | 506.2 | 32-783 | 526.7 | 0-754 | 518.1 | 48-802 | 501.7 | 10-767 | 517.1 | 110-808 |
| Diploma | 15,139 | 529.4 | 140-790 | 518.6 | 80-763 | 535.7 | 118-802 | 545.2 | 81-795 | 532.3 | 187-808 |
| Associate Degree | 30,544 | 512.6 | 53-833 | 504.6 | 0-754 | 516.6 | 38-812 | 517.0 | 60-788 | 511.9 | 75-829 |
| TOTAL | 64,761 | 514.7 | 32-833 | 514.4 | 0-763 | 521.5 | 38-812 | 519.1 | 10-795 | 518.2 | 75-829 |

SOURCE: McQuaid, E.A., and Kane, M.T. How do graduates of different types of programs perform on state boards? *American Journal of Nursing*, 1979, *79*, 305-308.

Nurse researchers have conducted a great many small-scale studies, often as doctoral dissertations, to examine various aspects of possible differences among graduates of the three types of programs. These studies have used varying approaches: surveys of head nurses, supervisors, and nursing services directors; RNs' responses to simulated clinical situations, such as portrayed in film sequences; recollected "critical incidents"; and, in one case, direct observation of 29 RN subjects. A review of such research, conducted under a contract with the Division of Nursing, reported that the number of studies that found statistically significant differences in nursing practice related to nursing education have been limited. Results from some studies were conflicting; results from others found no overall effect.[2] The reviewers conclude that study limitations could have influenced the results.

As in any other type of social science research that seeks to associate causal factors with outcomes, formidable problems of method are encountered in attempts to explicate the differences in practice among RNs educated in the three types of programs. In this case, they include (1) defining the particular knowledge, skills, and attributes of nursing to be tested, (2) assigning weights to them that are reasonably related to patient outcomes, (3) identifying objective performance measures that will be reliable in the many settings where nursing care is provided, (4) obtaining random samples of subjects in sufficient numbers to allow for quality differences among individual nursing education programs of the same general type and for differences in the length of the graduates' work experience, (5) assuring an adequate response rate in surveys, and (6) getting from personnel records the kinds of data required for an analysis.

Many studies of nursing performance have recognized these problems but have been limited in the ability to deal with them. No investment at the level of resources required for large-scale empirical studies has yet been made.

Several efforts currently under way should facilitate the efforts of researchers by alleviating some problems of study methods. For example, the New York External Degree program, described in Chapter IV, in the course of formulating in detail the performance expected of the candidates for its examination, has taken major steps in defining the differences in the particular competencies expected of AD and baccalaureate candidates, and has designed objective measures for their testing.* The Orange County-Long Beach Consortium for education mobility has defined competencies for testing that also extend to graduates of practical nurse programs. Several other large-scale efforts, including those of the Southern Regional Education Board's Nursing Curriculum Project, are under way to define differences in expected competence.

Hospital personnel records usually do not include information about the educational background of the RNs they employ in a manner that permits systematic performance comparisons. Here, too, changes may be coming to increase study feasibility. For example, the Intermountain Health Care Corporation, a nonprofit multihospital system in Utah, will by early 1983 have a reporting system in place from all of its 22 member hospitals that will indicate the highest educational preparation of each RN staff member in conjunction with position held and length of experience.

## Conclusion

Several different pathways in nursing education lead to eligibility for initial licensure as an RN. The opinions of nurse educators, nursing service administrators, and nurse employers differ on the outcomes of these different educational paths, and more fundamentally on the competencies that should be expected and utilized, both in the short and long term.

As with most other kinds of postsecondary education, there is little empirical evidence on the performance differences of the graduates of these different types of nursing education programs according to established measurable criteria of knowledge, skills, attitudes, and range of competence. This lack creates problems for nurse educators planning curricula to encourage educational advancement, for nursing service administrators trying to utilize RNs and LPNs most efficiently, and for the various organized groups within nursing who are seeking to establish new levels of licensure or to maintain the current ones. Most important, perhaps, the current lack of clear objectives and performance measures seriously handicaps the efforts of higher education bodies and state university systems attempting to allocate resources for nursing education in ways that will best match the demand for nurses with different kinds of competencies.

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## RECOMMENDATION 19

> Federal and private funds should support research that will provide scientifically valid measurements of the knowledge and performance competencies of nurses with various levels and types of educational preparation and experience.

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## Evaluation of Promising Management Approaches

In its review of the literature and in testimony heard, the committee noted numerous descriptions of management initiatives that individual institutions have successfully implemented to attract nurses, improve their retention, and employ them productively. There is little, however, to indicate widespread application of some promising innovations, or to characterize the determinants of success. Thus, for an individual institution seeking to cope with its own turnover or productivity problem, there are no adequate guides on how to choose from the growing number of strategies and adapt them to specific circumstances. Although many of these measures may have produced positive results in one place or another, they often required major organizational and financial investments and may not be appropriate for all institutions.

In this respect, the accomplishments of the National Commission on Nursing are important, for they provide evidence that major components of the hospital industry--hospital associations, administrators, and trustees--can work effectively with leadership of the nursing and medical professions to identify the causes and solutions of problems in the organization and delivery of nursing care. There is a need to continue the process begun by the commission of identifying nursing management innovations and assessing their applicability at national, regional, and local levels. An example of a statewide approach can be found in the type of organization recommended recently by the Statewide Health Coordinating Council of Michigan (SHCC), which recommended the creation of a joint commission of employers and employees "to serve as a clearinghouse for information, to develop some common understanding, to make consulting services available, and to make reports to the SHCC and others."[3]

To expand that type of activity quickly to other areas of the country, the committee believes that federal participation is required. Support is needed for rigorous evaluations of demonstrations and of naturally occurring experiments to reveal the costs, relative risks, benefits, and prerequisites that need to be considered in undertaking various management strategies. The dissemination of results from such evaluations under federal auspices could provide an incentive for further communication and collaborative action among the various national and local groups that affect nursing manpower and education policy. It is believed that such activities will attract other sources of support in the private sector to carry out an ongoing effort.

## Conclusion

Managers attempting to solve problems in the delivery and organization of nursing services often lack critical assessment of others' experience with innovative solutions.

Although individual health care institutions often develop interesting approaches for maintaining the desirability of careers in nursing, there is, nonetheless, a dearth of systematic information on their wider applicability. The committee would like to see the hospital and nursing home industry and the professions of nursing and medicine develop a concerted effort to continue the work begun by the National Commission on Nursing. We believe that the federal government can stimulate innovation by disseminating information, by according national recognition to model solutions, and by supporting more rigorous evaluation than is likely to be undertaken by the industry itself. The focus of federal attention on these areas of research should draw the interest of other sources of support in the private sector. The federal investment in such research could be repaid many times through savings in health care expenditures resulting from improved efficiency in the management and use of nursing resources.

### RECOMMENDATION 20

> As national and regional forums identify promising approaches to problems in the organization and delivery of nursing services, there will be a need for wider experimentation, demonstration, and evaluation. The federal government, in conjunction with private sector organizations, should participate in the critical assessment of new ideas and the broad dissemination of research results.

## Information to Monitor Supply and Demand

To conduct the monitoring necessary to anticipate future nursing surpluses or shortages, and thus to plan appropriately, federal and state government policymakers, nursing service employers, and the nursing profession all need adequate and timely information. Their efforts can only be useful to the extent that their baseline data are current and complete.

The U.S. Census Bureau, the Bureau of Labor Statistics, and the National Center for Health Statistics all provide essential background against which to examine the significance of data about the supply of nurses. The information generated by the American Hospital Association (AHA) in its annual surveys by hospitals and by the National League for Nursing (NLN) in its annual surveys of nursing education programs also constitutes essential components for nursing education planning. The inventories of RNs and LPNs, conducted periodically by the American Nurses' Association (ANA), and the regular publication of the ANA fact book are other invaluable sources of data. The sample surveys of RNs and subsequent analyses made by the DHHS Bureau of Health Professions are of major importance.* Nevertheless, there are many gaps in necessary data and unrealized possibilities for filling them.

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*The ANA initiated inventories of RN and LPN supply in 1949 and 1967, respectively. Following these original inventories, others were conducted during the 1950s and 1960s. Most recently, inventories of RNs were conducted in 1977 and of LPNs in 1974. Because of their large cost, inventories have been largely replaced by sample surveys relying on statistical sampling methods to reduce cost and yet yield reliable supply estimates. The DHHS Division of Nursing (HRA) funded RN sample surveys conducted in 1977 by the ANA and in 1980 by Research Triangle Institute. Surveys of nurses in public health departments are also conducted from time to time.

The recent national projections from the Vector model, published in the DHHS 1982 Third Report to Congress, had to rely on baseline information on the supply of nurses from a 1977 survey and population projections made in 1978.[4] Accurate national data on numbers and distribution of LPNs, in total and by work setting, have been unavailable since the ANA inventory in 1974. Many essential data collection activities, such as sample surveys of nurses, on which this and other studies have relied, are conducted only sporadically. Since 1977, no detailed information has been available about the nation's nursing homes, the characteristics of their patients, or their staffing.

The NLN makes important contributions to national supply estimates by collecting annual nursing school admission, enrollment, and graduation data. However, it does not collect data on the cost and financing of nursing education. In the coming years of increasing fiscal constraints, it will be particularly important for policymakers concerned with the supply of nurses to have current information on nursing students' educational costs and their sources of financial support. The National League for Nursing collects data on tuition and fees, but there are no comparable data on students' other out-of-pocket education expenses, nor on their living expenses. No current data are available on the amounts of funds from various sources--state, federal, and private--that nursing students use to meet their education costs. Periodic surveys of nursing students in undergraduate and graduate education programs, analogous to those conducted in other health professions, will become very valuable to state and federal policymakers in the future on such issues as

- whether nursing education is more or less costly for students than other education programs
- whether nursing students are more likely than other students to be self-supporting
- how heavily nursing students rely on general federal student aid, state student aid, and other sources, as well as on their own earnings
- how important the availability of financial assistance is to their choice of nursing education and their choices among specific programs.

The annual surveys of hospitals conducted by the AHA have provided data about hospital nursing service staffs (RNs, LPNs, and aides) since 1953. However, their data collection efforts have not been focused on nursing service cost and revenue generation.

Although detailed data about the curricula of individual nursing education programs are collected during the course of accreditation reviews and are available in catalogs, the information has not been assembled in a form that permits comparative analysis.

State boards of nurse licensure keep current counts of RNs and LPNs who hold licenses in their state. This information is important for state projections. However, it cannot now be used to provide aggregate national supply estimates because many nurses hold licenses in several states, and there is no system for unduplicating the count. The state boards of nurse licensure also gather detailed information about all nursing programs in their jurisdictions. This information could provide a rich source of information for state nursing education planning, but is largely untapped. If it were collected in a standardized manner, individual states could use it to compare their experiences with others.

The committee, having identified these current gaps in information, also stresses the necessity for the federal government, the states, and the professional associations to continue their current data collection and analysis activities. The short-run costs of data collection and analysis can prevent poorly planned long-run investments in nursing education that result in too large or too small a supply of nurses. The federal government has a proved ability to coordinate data collection efforts on national nursing supply and requirements with the nursing profession, nursing service employers, and state agencies. It is in a unique position to do so. The government also has proved its technical capacity in designing the collection and analysis of timely, unduplicated, and accurate national nursing data. The nursing profession, employer groups, and state agencies collect data for different purposes and according to different definitions. Thus, in the absence of major federal guidance and federal financial support, they often are unable to provide unduplicated, accurate, and timely data needed for estimating present conditions as well as for projecting nurse requirements and supply.

Although the committee believes that the federal government should continue to take the lead in coordinating and supporting national nursing data collection efforts, it assumes that the important contributions of other organizations in obtaining these data will continue. Professional associations can provide technical assistance in the development of new kinds of professionally relevant data collection instruments and can solicit the support of the profession in new data collection efforts. Nursing service employers can provide similar assistance, in addition to financial support; they would be particularly benefited by adequate estimates of future nursing supply geared to future demand. Employers also can promote the collection of nursing service cost and revenue data in a uniform manner. If state licensing agencies standardized and expanded their licensing files, a large proportion of needed data could be obtained through the annual or biennial license application and renewal process. State education agencies could promote the collection of both public and private nursing program data, including detailed program cost and financing data.

## Conclusion

In order to maintain the necessary capability for monitoring the future balance between the nation's supply of and demand (or its perceived needs) for both RNs and LPNs, officials responsible for planning and decision making in state and federal governments depend on continuing streams of reliable national information from many sources. Some is collected periodically, some occasionally. Some is badly outdated, as in the case of survey information concerning LPNs.

Data collection and analysis require the continued support of the federal and state governments and of professional associations to assure adequate financing of necessary studies. The collection of new data to yield information not now available requires some rearrangement of priorities within available funding, rather than infusions of new funds. In the course of this study, we have identified serious gaps in such areas as costs and financing sources for nursing education, nursing education curricula, the supply and distribution of LPNs, and the staffing of nursing homes.

The federal government, in cooperation with the nursing profession, nursing organizations, health care institutions, and state governments, should continue to provide leadership in nurse manpower data collection in order to maintain and improve definitional conformity, to provide a sense of priorities, and to minimize duplicative efforts.

The total appropriation for DHHS-HRA program management in FY 1982, of which nursing data collection activities constituted only a part, was approximately $9.5 million. By recent reorganization, the amounts for this function will now be included in the HRSA budget. Cost-benefit assessments on the value of data collection and analysis are difficult to generalize; individual projects must be judged on their merits. Short-run investments in information can often avoid much costlier misallocation of program funds over the longer run. The committee's recommendation is intended to reflect its concern for maintaining appropriation support for program management, data collection, and analysis at a level comparable to the value of the 1982 appropriations for these programs.

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RECOMMENDATION 21

To ensure that federal and state policymakers have the information they need for future nurse manpower decisions, the federal government should continue to support the collection and analysis of compatible, unduplicated and timely data on national nursing supply, education, and practice, with special attention to filling identified deficits in currently available information.

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## APPENDIX 1

# Congressional Charge— Excerpts From Public Law 96-76

Sec. 113.(a)(1) The Secretary of Health, Education, and Welfare (hereinafter in this section referred to as the "Secretary") shall arrange, in accordance with subsection (b), for the conduct of a study--

(A) to determine the need to continue a specific program of Federal financial support for nursing education,

(B) to determine the reasons nurses do not practice in medically underserved areas and to develop recommendations for actions which could be taken to encourage nurses to practice in such areas, and

(C) to determine the rate at which and the reasons for which nurses leave the nursing profession and to develop recommendations for actions which could be taken to encourage nurses to remain or reenter the nursing profession, including actions involving practice settings conducive to the retention of nurses.

(2) The part of the study described in paragraph (1)(A), shall include considerations of the following:

(A) The need for nurses under the present health care delivery system and under such system as it may be modified by increased use of ambulatory care facilities or as it may be changed by the enactment of legislation for national health insurance. Determination of such need shall include determination of the need for nurses trained in each type of school of nursing (as defined in section 853(2) of the Public Health Service Act), for nurses with graduate training in the varying nurse practitioner clinical specialties, and for nurse administrators and nurse educators.

(B) The cost of nursing education and a comparison of the cost of education at each type of school of nursing (as so defined) and comparison of the cost of each of the graduate programs of nursing.

(C) The availability of other sources of support for nursing education, including support under general programs of Federal financial support for postsecondary education, under State and other public programs, and from private sources.

(b)(1) The Secretary shall first request the National Academy of Sciences (hereinafter in this section referred to as the "Academy"), acting through the Institute of Medicine, to conduct the study, required by subsection (a), under an arrangement whereby the actual expenses incurred by the Academy directly related to the conduct of such study will be paid by the Secretary. If the Academy agrees to such request, the Secretary shall enter into such an agreement with the Academy.

(2) If the Academy declines the Secretary's request to conduct such study under such an arrangement, then the Secretary, after consulting with the Committee on Labor and Human Resources of the Senate and the Committee on Interstate and Foreign Commerce of the House of Representatives, shall enter into a similar arrangement with another appropriate public or nonprofit private entity to conduct such study.

(3) Any arrangement entered into under paragraph (1) or (2) of this subsection for the conduct of a study shall require that such study be completed and reports thereon be submitted within such period as the Secretary may require to meet the requirements of subsection (c).

(4) The Secretary shall undertake such preliminary activities as may be necessary to enable the Secretary to enter into an arrangement for the conduct of the study at the earliest possible date.

(c) Not later than six months after the date the arrangement for the conduct of the study is entered into under subsection (b), the Secretary and the entity conducting the study shall each report to the Committee on Human Resources of the Senate and the Committee on Interstate and Foreign Commerce of the House of Representatives their respective preliminary recommendations respecting the matters described in subparagraphs (A), (B), and (C) of subsection (a)(1) and, if a need for continued Federal financial support for nursing is found, the form in which the support should be provided. Not later than two years after such date, the Secretary and the entity which conducted the study shall each report to such Committees recommendations respecting such matters (including the form of Federal financial support for nursing) and the basis for such recommendations.

## APPENDIX 2

# Appropriations Under the Nurse Training Act

Appropriations under the Nurse Training Act (NTA) of 1964 and subsequent amendments are listed in Table 1. The listing provides information through Fiscal Year (FY) 1982. The latest amendments, which were part of the Omnibus Budget Reconciliation Act of 1981, extended nurse training provisions of the Public Health Service Act through FY 1984.

The NTA and subsequent amendments authorized funds for a number of programs of institutional support and student support. In addition, support for research activities has been provided under other provisions of the Public Health Service Act. The data in this appendix were secured from various sources in the Department of Health and Human Services (DHHS) and Health Resources and Services Administration (HRSA).

### Formula and Capitation Grants

Capitation grants provided support to basic nursing education programs from FY 1972 through FY 1981. About 1,000 schools received assistance annually. In 1980, 1,075 schools participated, including 386 baccalaureate programs, 554 associate degree (AD) programs, and 135 diploma programs. About 190,000 students were enrolled in these schools.

The amount of capitation support varied among schools according to the type of program and number of full-time students. In 1980, the average level of support per student counted for capitation purposes was $221 for students in baccalaureate programs, $152 for students in AD programs, and $138 for students in diploma programs.

Participating schools were required to increase enrollment of first-year students or to strengthen program activities in at least two specified programs. The program options were (1) training of nurse practitioners, (2) encouraging enrollment and retention of students from disadvantaged backgrounds, (3) providing clinical training at sites geographically remote from the school, and (4) extending continuing education opportunities.

TABLE 1 History of Appropriations for Nurse Training Act and Research Programs, Fiscal Year 1965-1982 (in millions of dollars)

| | | Institutional Support | | | | | Student Support | | | Research | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | Total | Formula and Capitation | Special Projects | Construction[a] | Advanced Nursing Education | Nurse Practitioner | Loans[b] | Traineeships | Scholarships | Fellowships | Grants | Other |
| 1965 | 19.8 | 4.0 | 2.0 | | | | 3.1 | 8.0 | | 0.7 | 2.0 | |
| 1966 | 41.5 | 2.5 | 3.0 | 15.0 | | | 8.9 | 9.0 | | 0.9 | 2.2 | |
| 1967 | 65.7 | 6.0 | 4.0 | 25.0 | | | 16.9 | 10.0 | 0.5 | 1.0 | 2.2 | |
| 1968 | 66.8 | 3.0 | 4.0 | 25.0 | | | 16.0 | 10.0 | 5.0 | 1.1 | 2.7 | |
| 1969 | 45.5 | 3.0 | 4.0 | 8.0 | | | 9.6 | 10.5 | 6.5 | 1.4 | 2.6 | |
| 1970 | 54.4 | | 8.4 | 8.0 | | | 16.4 | 10.5 | 7.2 | 1.4 | 2.6 | |
| 1971 | 69.4 | | 11.5 | 9.5 | | | 17.1 | 10.5 | 17.0 | 1.4 | 2.6 | |
| 1972 | 138.7 | 31.5 | 9.0 | 19.7 | | | 21.0 | 11.5 | 19.5 | 1.4 | 2.5 | 12.0 |
| 1973 | 140.2 | 38.5 | 25.0 | 21.0 | | | 24.0 | 12.5 | 21.5 | 1.7 | 2.5 | 14.0 |
| 1974 | 159.6 | 34.3 | 19.0 | 20.0 | | | 24.4 | 13.0 | 19.5 | 1.4 | 2.5 | 5.4 |
| 1975 | 122.7 | 34.3 | 19.0 | 20.0 | | | 24.4 | 13.0 | 6.0 | | 1.2 | 4.8 |
| 1976 | 127.5 | 44.0 | 19.0 | 1.0 | 2.0 | 3.0 | 33.5 | 13.0 | 12.0 | | | |
| 1977 | 124.0 | 40.0 | 15.0 | | 9.0 | 9.0 | 25.5 | 13.0 | 6.5 | 1.0 | 5.0 | |
| 1978 | 125.5 | 30.0 | 15.0 | 3.5 | 12.0 | 13.0 | 24.0 | 13.0 | 9.0 | 1.0 | 5.0 | |
| 1979 | 106.3 | 24.0 | 15.0 | | 12.0 | 13.0 | 14.3 | 13.0 | 9.0 | 1.0 | 5.0 | |
| 1980 | 106.3 | 24.0 | 15.0 | | 12.0 | 13.0 | 14.3 | 13.0 | 9.0 | 1.0 | 5.0 | |
| 1981 | 80.3 | 10.0 | 12.0 | | 12.0 | 13.0 | 14.3 | 13.0 | | 1.0 | 5.0 | |
| 1982 | 50.8 | | 6.2 | | 11.5 | 11.5 | 7.7 | 9.6 | | 1.0 | 3.4 | |
| TOTAL | 1,645.0 | 329.1 | 216.1 | 175.7 | 70.5 | 75.5 | 315.4 | 206.1 | 148.2 | 18.4 | 54.0 | 36.2 |

NOTE: Some lines do not add because of rounding.

[a] Includes interest payments.
[b] Includes loan repayments and collections.

SOURCE: Department of Health and Human Services, Health Resources and Services Administration, Division of Nursing.

## Special Project Grants and Contracts

Special projects to improve the availability and quality of nursing education are assisted under this funding program. There are currently five specified purposes:

1. to increase educational opportunities for individuals from disadvantaged backgrounds;
2. to provide continuing education;
3. to provide retraining opportunities for nurses reentering active practice;
4. to increase the supply or improve the distribution of nurses by geographic area and speciality field; and
5. to upgrade the skills of licensed vocational and practical nurses and other paraprofessional personnel.

At least 20 percent of available funds must be used for item 1, 20 percent for item 4, and 10 percent for item 5.

Three other purposes were specified for support prior to 1982. They were the following:

6. to assist mergers and other cooperative agreements among hospitals and academic institutions;
7. to develop new or modify existing training programs, develop research in nursing education, and improve curricula; and
8. to assist short-term training for nurses' aides and orderlies in nursing homes.

In recent years, about 100 projects received assistance annually. In 1981, assistance was awarded to 98 projects at 84 nursing schools and 14 other agencies. About 40 percent of the projects related to item 7, 30 percent to item 2, 20 percent to item 4, and 10 percent to item 1.

## Construction Assistance Grants Program--Nursing

Funds were appropriated under NTA as extended and amended, to aid the construction and equipping of nursing education facilities over a 12-year period beginning in 1966. Altogether, assistance was provided to 301 programs, of which 52 were diploma programs, 90 AD programs, 105 baccalaureate programs, 43 graduate degree programs, and 11 continuing education programs. About 70 percent of the projects were for the expansion or renovation of existing schools and 30 percent for the construction of new schools.

Schools expanding facilities were required to expand first-year enrollment by at least 5 percent or 5 students, whichever was greater. Local funds financed at least 25 percent of the construction costs.

Over 50,000 student places benefited from this activity, of which over 12,000 were increased first-year student places. Of the total, about 16 percent were in diploma programs, 23 in AD programs, 54 percent in baccalaureate programs, and 7 percent in graduate degree programs.

## Advanced Nurse Training Grants and Contracts

Assistance is made available to collegiate schools of nursing to (1) plan, develop, and operate, (2) significantly expand, or (3) maintain programs to prepare nurses at the graduate level. Educational programs offering master's and doctoral degrees are supported to help develop clinical nurse specialists, teachers, administrators, and supervisors. Special emphasis is now given to three clinical specialties: maternal and child health, geriatrics, and community health nursing.

In recent years, about 90 projects have been supported annually. Between 1979 and 1981, about 80 percent of the areas of concentration in these programs were focused on clinical specialties and about 10 percent each on education and administration. Among the clinical areas, maternal and child health and medical/surgical care were the most frequent, followed by geriatric and community health nursing. About 90 percent of the programs were at the master's level and 10 percent at the doctoral level.

In academic year 1981, about 2,500 full-time equivalent students were enrolled in assisted programs, of which approximately 1,500 were full time. During that period, there were about 700 graduations, approximately 14 percent of the estimated national total.

## Nurse Practitioner Grants and Contracts

Support is provided to (1) plan, develop and, operate, (2) significantly expand, or (3) maintain programs to train nurse practitioners. Emphasis is given to training to improve care to geriatric and nursing home patients and to strengthen primary health care in homes, ambulatory care facilities, long-term care facilities, and other settings.

In recent years, about 70 projects have been funded annually. In 1981, 75 projects were assisted, involving 103 training programs; 33 focused on family care, 21 on pediatrics, 15 on adult care, 14 on geriatrics, and 11 on midwifery. About 1,900 students were enrolled in these projects, of which 41 awarded master's degrees and 34 awarded certificates. About 80 percent of the projects were at nursing schools, 8 percent at medical schools, 6 percent at hospitals, and 5 percent at other participating institutions.

Traineeships have also been provided to selected nurse practitioner students who agree to serve after graduation in designated primary medical care shortage areas. Eligibility was limited to students from health manpower shortage areas through 1981; thereafter, the legislation, although not limited to residents of these areas, provided that special consideration be given to them.

Payback commitments equal the months of educational support. Traineeships were made through participating schools; 36 schools received support initially in 1978, and some of them have received subsequent continuation awards. A total of 361 eligible trainees were appointed between FY 1978 and FY 1981.

## Student Loans

Low-interest loans up to $2,500 a year--to a total of $10,000--are made to assist students in basic registered nursing education programs (including diploma, AD, and baccalaureate programs) and in graduate programs. Students may be on a full-time or half-time basis. Funds are awarded to participating schools on a formula based on the relative number of full-time nursing students. The schools make and monitor the loans and must contribute at least 10 percent of the total federal dollars awarded.

Participating schools may retain the amounts repaid by students and make new loans from a revolving fund made up of collections. Loans are repayable over 10 years following completion of training; repayment may be deferred during advanced professional education in nursing, study as a nurse anesthetist, or service in the uniformed services or Peace Corps.

About 1,150 schools have participated in this program annually. In 1982, about 24,000 students received loans--about 8,200 from newly appropriated funds and 15,600 through the revolving funds. The average loan was approximately $800.

Loans incurred under this program prior to September 29, 1979, may be canceled in part for service of more than one year as a nurse in a public or nonprofit hospital, health center, or other health care agency for more than one year. Since 1971, cancellations may be up to 85 percent for 5 years of service; previously, cancellations were up to 50 percent or 100 percent, depending on the location and length of work as a nurse. Through 1979, a portion of about 150,000 loans had been canceled; the number of individual nurses benefiting is not known because many students received multiple loans from these funds.

Funds have also been available to repay portions of loans of nurses who serve in designated shortage areas. For those completing 2 years of such service, 60 percent is repaid; for 3 years, 85 percent. Between 1973 and 1982, about 130 nurses had benefited from this loan repayment option.

## Professional Nurse Traineeships

Grants are made to graduate schools of nursing and to schools of public health, which in turn provide traineeships for up to 36 months to students working toward a master's or doctoral degree. Nurses are prepared to serve as teachers, administrators and supervisors, nurse practitioners, and in other professional specialities determined by DHHS to require advanced training. These are the same clinical specialties that have been supported by the Advanced Nurse Training Program: maternal and child health, geriatric nursing, community health, acute care, adult care, and medical/surgical nursing. Priority in the award of traineeships to nurse practitioner trainees is given to nurse midwife trainees.

In recent years, between 2,000 and 3,000 trainees have received support annually. In 1981, awards made to 126 schools supported about 2,000 trainees at approximately $6,400 each.

## Scholarships

Scholarships up to $2,000 a year were made available to selected students with exceptional financial need in basic and graduate nursing education programs during a 14-year period beginning in 1967. Funds were allocated to participating schools on a formula based on the relative number of full-time nursing students. The schools selected the scholarship recipients.

About 1,300 schools participated in this program annually. In 1981, 1,328 schools received funds, including 603 AD programs, 418 baccalaureate programs, 213 diploma programs, and 94 graduate programs. That year, over 8,900 students received benefits, about 4 percent of the total student body.

During the program's operation, over 200,000 scholarships were made available. It is estimated that in excess of 67,000 students benefited. The average annual scholarship was about $1,000.

## Research Fellowships

Fellowships are awarded for full-time predoctoral and postdoctoral education in nursing and related behavioral and biological sciences under the authority of the Section 472 of the Public Health Service Act. Support is aimed at preparing nurses to conduct and direct research, collaborate in interdisciplinary research, and strengthen faculties in nursing schools. Support may be provided up to 5 years for predoctoral programs and up to 3 years for postdoctoral programs. Payback agreements require participation in research or teaching activities for periods commensurate with the educational support received.

In recent years, an average of about 115 predoctoral and 3 postdoctoral fellowships have been supported each year. In 1981, 47 new fellowships were awarded, of which 22 were in nursing, 11 in behavioral sciences, 3 in biomedical sciences, and 11 in other fields. Fellowships are sometimes referred to as National Research Service Awards.

## Research Grants

Grants are made to schools of nursing and other public and private institutions to support high-quality research projects, under the authority of Section 301 of the Public Health Service Act. Basic and clinical research related to patient care and clinical therapy, as well as to nursing education, manpower, and administration, is emphasized. In recent years, about 50 awards have been made annually. At the end of FY 1981, 58 projects were ongoing, of which 23 were focused on nursing practice and 11 on fundamental issues on which nursing practice research is based; 13 were institutional projects designed to enhance the research capabilities of schools of nursing with doctoral programs; 6 were concerned with such issues as stress, parenting, and health promotion; and 5 dealt with the delivery of nursing services and professional issues, such as nursing staff turnover.

## Other

Between 1972 and 1975, funds were available for specific other programs. These included aid to nursing schools experiencing financial distress, start-up grants to initiate new nursing programs, and funds to encourage recruitment of groups underrepresented in nursing, including minorities. Authority for financial distress grants was reinstated in 1981, but no funds have been appropriated under the new provision.

## APPENDIX 3

# Summary of Information on State Reports of Nursing Issues

Nursing issues have been studied in almost every state of the nation during the past few years. Reports of recent studies have been identified from 45 states. More than 75 such studies were completed between 1977 and 1982.

As indicated in Table 1, many agencies--both public and private--have sponsored and published studies of nursing issues in recent years. In many states, more than one agency undertook such reviews. In some cases, the multiple state studies were complementary, focusing on different aspects of the subject; in others, they present different perspectives and conclusions.

A majority of the recent state nursing studies have been sponsored by public agencies. Altogether about two-thirds were by official bodies. State higher education agencies were the most frequent sponsors. Other public agencies that were active along these lines in many states were nursing or other schools at a state university, state health planning agencies, and governors' commissions and legislative committees. In other cases, health departments, education departments, and nursing boards took the lead.

Private agencies assumed responsibilities for reviews of nursing issues in about one-third of the states. State hospital associations often conducted studies of nursing problems being experienced by their member hospitals. State nurses' associations carried out such studies directly in many states and participated actively in others.

There has been broad participation in many of these efforts. Committees composed of representatives of the many parties concerned with nursing matters were reported to have been involved in about one-half of the studies. In some cases, they were responsible for directing the work, and in others they had advisory roles. In many cases, public hearings provided opportunities for other concerned parties to participate.

In about one-half of the states, the studies involved detailed analyses. In the past 2 years, for example, reports of extensive studies were issued in Alaska, Arizona, Arkansas, Georgia, Indiana, Maryland, Michigan, Ohio, South Carolina, and Wyoming.

About 40 of the studies addressed educational issues and a similar number focused on employment aspects. Approximately 25 studies presented projections of future requirements and resources and about

TABLE 1 Major State Reports on Nursing Issues, 1977-1982

| | Sponsoring Agency and Year of Report | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Region/State | State Higher Education Agency | State University | State Health Planning Agency | Governor or Legislature | Other Official Agency | State Nurses Association | State Hospital Association | Other Private Agency |
| NATIONAL TOTAL | 16 | 9 | 7 | 6 | 13 | 9 | 15 | 2 |
| East | | | | | | | | |
| Connecticut | | | | | 1981 | | | |
| Maine | | | 1982 | | | | | |
| Massachusetts | | | | | | 1979 | 1982 | |
| New Hampshire | | | | | | 1980 | 1981 | |
| New Jersey | 1980 | | | | | | 1981 | |
| New York | | | 1981 | | | | | |
| Pennsylvania | | | | | | 1980 | 1981 | |
| Rhode Island | | | | | 1980 | 1977 | | |
| Midwest | | | | | | | | |
| Illinois | 1980 | | | 1981 | | | 1981 | |
| Indiana | 1981 | | | | | | | |
| Iowa | | | | | 1977 | | | |
| Kansas | | | 1982 | 1977 | | | | |
| Michigan | | | 1982 | | | | | |
| Minnesota | 1980 | | | | | | | |
| Missouri | 1980 | | | | | | | |
| Ohio | | | | 1981 | | | | |
| South Dakota | | 1982 | | | | | | |
| Wisconsin | | 1979 | | | | | | |

|  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|
| South |  |  |  |  |  |  |  |  |
| Alabama | 1980 |  |  |  |  |  |  |  |
| Arkansas |  |  |  |  |  |  | 1981 | 1981 |
| Delaware |  |  |  |  |  |  | 1981 |  |
| Florida | 1982 |  |  |  | 1980 |  |  |  |
| Georgia | 1981 |  |  |  |  |  |  |  |
| Kentucky | 1982 |  |  |  |  |  |  |  |
| Louisiana |  |  |  |  |  |  | 1980 |  |
| Maryland |  |  |  | 1982 | 1981 | 1977 | 1980 |  |
| Mississippi | 1978 |  |  |  |  |  |  |  |
| North Carolina |  | 1981 |  |  | 1982 |  |  | 1982 |
| Oklahoma |  |  |  | 1980 |  | 1980 |  |  |
| South Carolina | 1981 |  |  |  |  |  |  |  |
| Tennessee | 1977 |  |  |  |  |  | 1980 |  |
| Texas |  | 1980 |  | 1982 |  | 1981 | 1981 |  |
| Virginia | 1977 |  |  |  |  |  | 1980 | 1980 |
| West Virginia |  |  |  | 1980 |  |  |  |  |
| Southern Regional Education Board |  |  |  |  | 1979 |  |  |  |
| West |  |  |  |  |  |  |  |  |
| Alaska |  | 1981 |  |  |  |  |  |  |
| Arizona |  |  | 1981 |  | 1981 |  | 1981 |  |
| California | 1981 |  | 1981 |  | 1979 |  | 1980 |  |
| Colorado | 1979 |  |  |  | 1978,1980 |  |  |  |
| Hawaii |  | 1979 |  |  |  |  |  |  |
| Idaho |  |  |  |  | 1977 |  | 1981 |  |
| Nevada |  |  |  |  |  | 1980 |  |  |
| New Mexico |  | 1978,1980 |  |  |  |  |  |  |
| Oregon |  | 1981 |  |  |  |  |  |  |
| Utah | 1978 |  |  |  |  |  |  |  |
| Wyoming |  |  | 1982 |  |  |  |  |  |

NOTE: Does not include studies underway in 1982 for which there is no report available.

20 studies included information on current shortages of nursing personnnel. Many reports covered various aspects of the subject.

As would be expected, studies conducted by higher education agencies, state universities, and education departments tended to focus on educational issues. Those undertaken by hospital associations tended to concentrate on employment topics. Those initiated by governors' commissions, legislative committees, planning agencies, and nursing associations often addressed a broad range of subjects.

In reviews of educational issues, the most common topics that were considered in these reports were extension of continuing education programs, extension of programs to help nurses to advance from one educational level to the next, and expansion of graduate programs. Other matters receiving considerable attention were the relation of education to practice, preparation of faculty, increases in enrollment, coordination of educational programs, strengthening of clinical experiences, and development of off-campus courses.

Reviews of employment issues often focused on the nature of working conditions, salary levels and ranges, and opportunities for career advancement. Other subjects along this line that were frequently discussed were the effect of vacancies, the impact of new technology, changes in nursing roles and responsibilities, problem of geographical distribution, and difficulties in staffing particular shifts.

Reports of future nursing requirements and resources are commonly based on local efforts to apply the forecasting methodology developed by the Western Interstate Commission for Higher Education (WICHE). The essential characteristic of this forecasting approach is the use of panels of experts to estimate, by means of professional judgments and criteria, the numbers and types of staffing and the nursing service utilization ratios that are believed to be necessary to meet desirable health care goals.

In some cases, other approaches were taken. In a few reports, the results of projections based on different methods are compared. The "target" year varied considerably among the studies, ranging from 1982 to 1995. In most reports, the projections indicated desired changes in the mix of nurses that would result in estimated shortages of registered nurses (RNs), particularly those with baccalaureate degrees and surpluses of licensed practical nurses (LPNs).

Studies of current shortages of nursing personnel were usually made by state hospital associations among their member institutions. While hospitals were the usual respondents, long-term institutions were sometimes included also. Estimated shortages of RNs during 1980 tended to be in the range of 10-15 percent overall; especially serious problems were often reported in filling positions for intensive care units, on certain shifts (e.g., night and weekends), in rural areas, and in inner cities. More recent reports indicate less pressure in some situations but continuing problems in other areas.

The state studies suggest that two types of nursing shortages are of major concern. On the one hand, many are concerned about the availability of nurses to assume full-time positions in hospitals and sometimes in nursing homes. On the other hand, others are concerned about the supply of nurses with what is considered adequate preparation, usually at or above the baccalaureate level, to handle increased responsibilities.

Many reports also identified other issues of importance. Common among them were the numbers and responsibilities of LPNs, inadequacies of available data, and needs for additional research. Other topics that were often discussed were the roles and responsibilities of nurse practitioners, the number of minority nurses, the effect of migration, and the impact of changes in health care financing.

The state studies tend to concentrate on local and state actions to address identified problems. They often focus on needs and opportunities to make more effective uses of already available resources and to recognize the increasing restraints on new public spending. Some reports, however, recommend expansion of state funds for scholarships and institutional support. Only about one-quarter of these studies included references to federal grant programs for nursing, and almost all of these statements are descriptive in nature.

Actions to implement the recommendations of these studies have been initiated in many states. Commonly, those such activities have been slowed or delayed by the economic and fiscal difficulties being experienced in many parts of the country. In some states, detailed implementation schedules have been formulated assigning specific responsibilities to designated agencies and groups.

In many states these reports have resulted in efforts to establish continuing mechanisms to oversee the development of nursing resources and issues. These arrangements have included representatives of the many public and private agencies with interests in these topics, including personnel from educational institutions, employers, and professional associations. They have been aimed at making more effective use of available resources as well as facilitating implementation and monitoring changes.

For the convenience of the reader the sources of major state reports of nursing issues are presented in Table 2.

TABLE 2 Sources of Major State Reports on Nursing Issues, 1977-1982

| State | Month/Year | Sponsoring Agency | Title |
|---|---|---|---|
| East | | | |
| Connecticut | March 1981 | Department of Health Services<br>Hartford, CT 06106 | Analysis of Current Nurse Supply in Connecticut |
| Maine | January 1982 | Bureau of Health Planning and Development<br>Department of Human Services<br>Augusta, ME 04333 | Nurses: 1980-1981 |
| Massachusetts | August 1979 | Mass. Nurses Association<br>Boston, MA 02116 | Status of Nurses in Massachusetts |
| | January 1982 | Development Division<br>Mass. Hospital Association<br>Burlington, MA 01803 | The Supply of Nurses in Massachuetts: A Quantitative Analysis |
| New Hampshire | 1980 | N.H. Nurses Association<br>Concord, NH 03301 | Foundations for Growth: Nursing Resources and Requirements in New Hampshire |
| | | | Guidelines for Growth: A Plan for Nursing in New Hampshire |
| | January 1981 | N.H. Hospital Association<br>Concord, NH 03301 | Position Statement on Nursing Education Programs for New Hampshire |

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|---|---|---|---|
| New Jersey | July 1980 | N.J. Department of Higher Education<br>Trenton, NJ 08625 | An Analysis of the Need for Registered Nurses in N.J.: 1979-1980 |
|  | August 1981 | Health Research and Educational Trust of N.J.<br>Princeton, NJ 08540 | The Shortage of Nurses in N.J.: Causes and Remedies |
| New York | January 1981 | N.Y. State Health Planning Commission<br>Albany, NY 12237 | Are Nurses In Short Supply? A New York State Perspective |
| Pennsylvania | October 1980 | Pennsylvania Nurses Association<br>Harrisburg, PA 17110 | Report and Recommendations of the Task Force on the Educational Preparation of Nurses |
|  | January 1981 | Hospital Association of Pennsylvania<br>Camp Hill, PA 17011 | Analysis of Supply and Requirements in Pennsylvania and the United States |
| Rhode Island | November 1980 | Rhode Island Department of Education<br>Providence, RI 02906 | Review of Undergraduate Programs in Nursing in Rhode Island Public Institutions of Higher Education |
|  | September 1977 | Rhode Island State Nurses Association<br>Providence, RI 02906 | Analysis and Planning for Improved Distribution of Nursing Personnel and Services |

TABLE 2 (continued)

| State | Month/Year | Sponsoring Agency | Title |
|---|---|---|---|
| **Midwest** | | | |
| Illinois | May 1980 | Board of Higher Education<br>Springfield, IL 62701 | A Statewide Plan for Nursing Education |
| | January 1981 | Commission on Critical Health Issues<br>General Assembly<br>State of Illinois<br>Springfield, IL 62701 | Nursing Shortage Near Crisis Level? |
| | September 1981 | Illinois Hospital Association<br>Oak Brook, IL 60521 | Nursing Personnel in Illinois |
| Indiana | January 1981 | Commission for Higher Education<br>Indianapolis, IN 46204 | Recommendations for Nursing Education |
| Iowa | December 1977 | Board of Nursing<br>Des Moines, IA 50319 | The Impact of Basic Nursing Education and the Practice of Registered Nurses in the State of Iowa |
| Kansas | January 1982 | Statewide Health Coordinating Council<br>Department of Health and Environment<br>Topeka, KS 66620 | Nursing Resources |
| | March 1977 | Legislative Educational Planning Committee<br>Legislative Research Department<br>Topeka, KS 66612 | Nursing Education |

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|---|---|---|---|
| Michigan | March 1982 | Statewide Health Coordinating Council<br>Office of Health and Medical Affairs<br>Lansing, MI | Proposed State Health Plan 1983-1987, Vol. III, Health Personnel |
| Minnesota | August 1980 | Higher Education Coordinating Board<br>St. Paul, MN 55101 | A Report on Nursing Education in Minnesota |
| Missouri | May 1980 | Coordinating Board for Higher Education<br>Jefferson City, MO 65101 | Issues and Consideration Impacting on Policy Considerations in Nursing Education |
| Ohio | April 1981 | Division of Nursing<br>Department of Health<br>Columbus, OH 43216 | Master Plan for Nursing |
| South Dakota | August 1982 | Rural AHEC Program<br>University of South Dakota<br>Vermillion, SD 57069 | Nursing Study and Demand in South Dakota |
| Wisconsin | October 1979 | Statewide Study of Nursing and Nursing Education<br>University of Wisconsin System<br>Madison, WI 53706 | Wisconsin Statewide Study of Nursing and Nursing Education, Vol. I, II, and III |

TABLE 2 (continued)

| State | Month/Year | Sponsoring Agency | Title |
|---|---|---|---|
| South | | | |
| Alabama | November 1980 | Commission on Higher Education<br>Montgomery, AL 36197 | Nursing Education in Alabama |
| Arkansas | September 1981 | Statewide Planning and Development for Nursing Education Project<br>Little Rock, AR 72201 | Future Direction for Nursing Education in Arkansas<br>Nursing Requirement and Supply in Arkansas, 1980-1985 |
| | March 1981 | Arkansas Hospital Association<br>Little Rock, AR 72207 | Survey of Registered Nurses in Hospital |
| Delaware | August 1981 | Association of Delaware Hospitals<br>Dover, DE 19901 | A Study of the Supply and Demand for Nurses in Delaware |
| Florida | June 1982 | Postsecondary Education Planning Commission<br>Tallahassee, FL 32301 | Nursing Education in Florida |
| | March 1980 | Department of Education<br>Tallahassee, FL 32301 | Progress Report on the Regional Consortia<br>Approach to Nursing Education in Florida |
| Georgia | June 1981 | Board of Regents<br>University System of Georgia<br>Atlanta, GA 30334 | Statewide Assessment of Nursing Education |

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|---|---|---|---|
| Kentucky | August 1982 | Council on Higher Education<br>Frankfort, KY 40601 | Study of Nursing Manpower Requirement and Resources in Kentucky 1981 and 1985 |
| Louisiana | October 1980 | Louisiana Hospital Association<br>Baton Rouge, LA 70898 | Recruitment and Retention of Registered Nurses by Louisiana Hospitals |
| Maryland | August 1982 | Governor's Commission on Nursing Issues<br>Annapolis, MD 21401 | Report of the Governor's Commission on Nursing Issues |
| | January 1981 | Department of Health and Mental Hygiene<br>Baltimore, MD 21201 | A Review of the Nursing Shortage in Maryland |
| | 1977 | Maryland Nurses Association<br>Baltimore, MD 21218 | A Study of Nursing and Nursing Education in Maryland |
| | December 1980 | Maryland Hospital Association<br>Lutherville, MD 21093 | Nursing in Maryland<br>Maryland Hospitals--In Critical Condition? |
| Mississippi | March 1978 | Board of Trustees<br>State Institutions of Higher Learning<br>Jackson, MS 39205 | An Assessment of Nursing Needs and Resources in Mississippi for 1981 |

TABLE 2 (continued)

| State | Month/Year | Sponsoring Agency | Title |
|---|---|---|---|
| North Carolina | February 1981 | Board of Governors<br>Univ. of North Carolina<br>Chapel Hill, NC 27514 | Nursing Education: 1980-1985 |
| | April 1982 | N.C. Area Health Education Systems<br>Chapel Hill, NC 27514 | Nurse Manpower Survey |
| | August 1982 | N.C. Task Force in Nursing<br>Program on Access to Health Care<br>Raleigh, NC 27605 | Preliminary Report of Task Force on Nursing |
| Oklahoma | September 1980 | Oklahoma Nurses Association<br>Oklahoma City, OK 73103 | State Master Plan for Nursing |
| | 1980 | Governor's Commission on Nursing<br>Oklahoma City, OK 73103 | |
| South Carolina | June 1981 | Commission on Higher Education<br>Columbus, SC 29201 | The South Carolina Plan for Nursing Education |
| Tennessee | February 1977 | Higher Education Commission<br>Nashville, TN 37219 | Nursing Education Needs in Tennessee |
| | February 1980 | Tenn. Hospital Association<br>Nashville, TN 37210 | Results From Nursing Shortage Survey |

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|---|---|---|---|
| Texas | 1980 | School of Nursing<br>University of Texas<br>Austin, TX 78701 | Conditions Associated With Registered Nurse Employment in Texas |
|  | May 1982 | Governor's Task Force on Higher Education<br>Austin, TX 78711 | Nursing Education in Texas |
|  | February 1981 | Texas Nurses Association<br>Austin, TX 78752 | Nurse Shortage in Texas |
|  | January 1981 | Texas Hospital Association<br>Austin, TX 78761 | Texas Suffering From Acute Shortage of Nurses |
| Virginia | 1977 | State Council of Higher Education<br>Richmond, VA 23219 | Health Manpower Study: Registered Nurses |
|  | 1980 | Task Force on Nursing Shortage<br>Va. Nurses Association<br>Richmond, VA 23230 | Inactive Registered Nurses Study |
|  | 1980 | Va. Hospital Association<br>Richmond, VA 23230 | Current Supply and Demand for Registered Nurses in Virginia |
| West Virginia | February 1980 | Governor's Commission on Nursing<br>W. Va. Department of Health<br>Charleston, WV 25305 | Registered Nurses, Licensed Practical Nurses Manpower Projections for 1984 |

TABLE 2 (continued)

| State | Month/Year | Sponsoring Agency | Title |
|---|---|---|---|
| Southern Regional Education Board | 1979 | Southern Regional Education Board<br>Atlanta, GA 30309 | Pathways to Practice |
| West | | | |
| Alaska | August 1981 | School of Nursing<br>University of Alaska<br>Anchorage, AK 99504 | Analysis and Planning Project for Nursing Requirements and Resources |
| Arizona | May 1981 | State Health Planning and Development Agency<br>Phoenix, AZ 85007 | Nursing Manpower Study--The Status of Nursing in Arizona |
| | Fall 1981 | Department of Health Services<br>Phoenix, AZ 85007 | Report of the Arizona Nursing Manpower Project |
| | May 1981 | Arizona Hospital Association<br>Phoenix, AZ 85040 | Action Plan of Nursing Task Force |
| California | January 1981 | California Postsecondary Education Commission<br>Sacramento, CA 95814 | A Report on Health Sciences Education Planning in California |
| | December 1981 | Office of Statewide Health Planning and Development<br>Sacramento, CA 95814 | 1981 California Health Manpower Plan |

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|---|---|---|---|
|  | June 1979 | Department of Consumer Affairs<br>Sacramento, CA 95814 | California Health Personnel Licensure Policy |
|  | June 1980 | California Hospital Association<br>Sacramento, CA 95814 | The Employment of Registered Nurses by California Hospitals |
| Colorado | April 1979 | Colorado Commission on Higher Education<br>Denver, CO 80203 | A Review of Nursing Education Programs in Colorado |
|  | April 1978 | Western Interstate Commission for Higher Education<br>Boulder, CO 80302 | Colorado Nursing Needs Assessment Project |
|  | October 1980 | Department of Personnel<br>Denver, CO 80203 | Compensation Study and and Occupational Review of Direct Health Care Classes |
| Hawaii | 1979 | University of Hawaii<br>Honolulu, HI | Report of the Advisory Committee on Nursing Education |
| Idaho | 1977 | State Board of Education<br>Boise, ID 83720 | A Report on the Nurse Education Curriculum Review |
|  | June 1981 | Idaho Hospital Association<br>Boise, ID 83707 | The Nursing Shortage |

TABLE 2 (continued)

| State | Month/Year | Sponsoring Agency | Title |
|---|---|---|---|
| Nevada | 1980 | Nevada Nursing Association<br>Reno, NV | |
| New Mexico | June 1978 | School of Medicine<br>University of New Mexico<br>Albuquerque, NM 87131 | Nursing Demand and Supply in New Mexico, 1977-1982 |
| | April 1980 | Division of Nursing<br>University of Albuquerque<br>Albuquerque, NM 87140 | Final Report of New Mexico SNAP Project |
| Oregon | February 1981 | School of Nursing<br>University of Oregon Health Sciences Center<br>Portland, OR 97201 | Report of Survey of Nurses |
| Utah | August 1978 | Board of Regents<br>Salt Lake City, UT 84102 | Study of Nursing Manpower Requirements for Utah, 1978-1995 |
| Wyoming | 1982 | State Health Planning and Development Agency<br>Cheyenne, WY 82002 | Wyoming Nursing Manpower Plan, 1982-1986 |

## APPENDIX 4

# Certificates for Specialist Registered Nurses

This study has identified 13 certifying organizations reporting special certification for 69,140 registered nurses (RNs), of whom 13,593 are nurse practitioners and nurse midwives. The following tables list these organizations together with relevant information. Table 1 lists all identified nurse certifying organizations. Tables 2 and 3 contain information on two organizations that certify RNs in specialty areas. In all tables, certification for nurse practitioners/nurse midwives is underlined. The information was obtained from members of the National Federation for Specialty Nursing Organizations and American Nurses' Association publications in November 1982.

TABLE 1 All Identified Nurse Certifying Organizations

| Organization | Year Began Certifying | Total Number Certified | Eligibility Requirements for Certification |
|---|---|---|---|
| American Nurses' Association (ANA) | 1974 | 10,269[a] | (detail in Table 2) |
| American Association of Critical Care Nurses (AACN) | 1976 | 12,101 | -RN licensure<br>-1 year of critical care experience within past 3 years |
| American Association of Nurse Anesthetists (AANA) | 1946 | ~19,000 | -RN licensure<br>-graduation from approved program in nurse anesthesia |
| American College of Nurse Midwives (ACNM) | 1971 | 2,598 | -RN licensure<br>-graduation from approved program in nurse midwifery |

TABLE 1 (continued)

| Organization | Year Began Certifying | Total Number Certified | Eligibility Requirements for Certification |
|---|---|---|---|
| Association of Operating Room Nurses (AORN) | 1979 | 3,770 | -RN licensure<br>-2400 hours of practical experience in operating room within the last 2 years<br>-must be recertified every 5 years |
| Emergency Department Nurses Association | 1980 | 6,000 | -RN licensure<br>-2 years of emergency room experience is recommended |
| Nurses Association of the American College of Obstetrics and Gynecology (NAACOG) | 1975 | 3,968 | (detail in Table 3) |
| American Board of Neurosurgical Nurses | 1977 | 1,120 | -RN licensure<br>-2 years of experience preferably in the field |
| American Association of Occupational Health Nurses (AAOHN) | 1972[b] | 2,406 | -RN licensure<br>-5 years of experience in occupational health nursing<br>-60 contact hours of continuing education within last 5 years<br>-currently employed full time in occupational health nursing |
| American Board of Urologic Allied Health Professionals | 1972 | ∼500; "a few" LPNs | -RN or LPN or physician's<br>-assistant licensure employed in urology for at least 1 year prior to examination |

TABLE 1 (continued)

| Organization | Year Began Certifying | Total Number Certified | Eligibility Requirements for Certification |
|---|---|---|---|
| International Association for accredited Enterostomal Therapy | 1979 | 608 | -RN licensure<br>-graduate of a 6 to 8-week enterostomal therapy course<br>-practice as an RN for at least 2 years prior to attending enterostomal course |
| Board of Nephrology field Examiners | 1977 | ~4,000 | -RN licensure<br>-currently employed in<br>-1 year of clinical experience in field |
| National Board of Pediatric Nurse Practitioners and Associates | 1977 | 2,800 | -RN licensure<br>-graduation from a formal pediatric nurse practitioner program |

[a] Does not include those jointly certified with NAACOG, but does include nurse practitioners.

[b] The AAOHN began certifying occupational health nurses in 1972. From 1972 until 1974, those nurses desiring certification were "grandfathered" in. The first occupational health nursing certifying exam was given in 1974.

TABLE 2 American Nurses' Association Specialty Certification

| Title of Specialty Area | Total Number Certified | Eligibility Requirements for Certification |
|---|---|---|
| Adult clinical specialist (psychiatric and mental health nursing) | 731 | -MSN in psychiatric and mental health nursing<br>-currently employed in direct patient care at least 4 hours each week<br>-post-MSN practice in field at least 8 hours per week for 2 years or 4 hours per week for 4 years<br>-experience in at least 2 different treatment modalities<br>-100 hours post-MSN supervision<br>-access to clinical supervision or consulation |
| Child and adolescent specialist (psychiatric and mental health nursing) | 66 | -as above |
| Psychiatric and mental health nursing | 633 | -currently practicing in field giving direct patient care at least 4 hours per week<br>-have practiced 24 of the last 48 months in the field<br>-have access to supervision or consultation |
| Medical-surgical nursing | 437 | -currently practicing in field giving direct patient care at least 16 hours per week<br>-have practiced 24 of last 36 months in field an average of at least 16 hours per week |
| Medical-surgical clinical specialists | 154 | -MSN<br>-currently practicing in field giving direct patient care an average of at least 4 hours per week<br>-have practiced 12 of last 24 months as clinical specialist (post MSN) giving direct patient care an average of at least 16 hours per week |

TABLE 2 (continued)

| Title of Specialty Area | Total Number Certified | Eligibility Requirements for Certification |
|---|---|---|
| Child and adolescent nursing | 95 | -1,500 hours of direct patient care in maternal and child health<br>-provided at least 200 hours of direct nursing care to children and adolescents 2 of last 3 years<br>-30 contact hours of continuing education in field within last 3 years |
| Gerontology nursing | 492 | -2 years of practice as a gerontological nurse |
| Nurse administration | 1,119 | -currently in middle management or executive nursing administrative position<br>-have been in middle or executive level nursing administrative position at least 24 months within last 5 years<br>-documentation of administrative responsibilities |
| Nurse administration advanced | 413 | -master's degree<br>-currently in executive level nursing administration or providing consultation in same<br>-have worked in executive level nursing position or provided such consultation at least 36 months within last 5 years<br>-documentation of administrative responsibilities |
| Community health nursing | 218 | -have practiced 2 of last 5 years as a community health nurse |
| High-risk perinatal nursing | 0[a] | -1,500 hours of direct patient care in maternal and child health nursing practice<br>-have provided at least 300 hours of direct nursing care in field for 2 of last 3 years (time spent in formal program for advanced study may count for 1 year)<br>-have 30 contact hours of continuing education in field within last 3 years |

TABLE 2 (continued)

| Title of Specialty Area | Total Number Certified | Eligibility Requirements for Certification |
|---|---|---|
| Maternal and Child Health (MCH) nursing | 0[a] | -2,100 hours of direct patient care in MCH nursing<br>-30 contact hours of continuing education in field within last 3 years |
| Pediatric nurse practitioner | 450 | -completed program of study that meets criteria identified by ANA and American Academy of Pediatrics in "Guidelines on Short-Term Continuing Education Programs for Pediatric Nurse Associates" or "Guidelines for Nurse Practitioner Training Programs" |
| School nurse practitioner | 272 | -completed formal education program affiliated with an institution of higher learning of at least 9 months or 1 academic year of full-time study including didactic and clinical components as outlined in the "Certification Guidelines for Educational Preparation of School Nurse Practitioners" |
| Adult nurse practitioner | 2,468 | -completed formal educational program affiliated with institution of higher learning of at least 9 months or 1 academic year of full-time study including didactic and clinical components as outlined in the "Certification Guidelines for Educational Preparation of Adult Nurse Practitioners" |
| Family nurse practitioner | 2,630 | -completed formal educational program affiliated with an institution of higher learning of at least 9 months or 1 academic year of full-time study including didactic and clinical components as outlined in "Certification Guidelines for Educational Preparation of Family Nurse Practitioners" |

TABLE 2 (continued)

| Title of Specialty Area | Total Number Certified | Eligibility Requirements for Certification |
|---|---|---|
| Gerontological nurse practitioner | 91 | -completed formal program of study that prepares nurses to function as adult, family, or gerontological nurse practitioners as outlined in "Guidelines for Nurse Practitioner Training Programs" |

NOTE: Taken from American Nurses' Association. 1983 certification catalog. Kansas City, Mo.: American Nurses' Association, 1982.

[a] First examination was given in October 1982. Results not yet available.

TABLE 3 Nurses' Association of the American College of Obstetrics and Gynecology (NAACOG) Specialty Certification

| Title of Specialty Area | Total Number Certified | Eligibility Requirements for Certification |
|---|---|---|
| Inpatient obstetric nurse | 865 | -2 years of experience in field<br>-employment in field within last 2 years |
| Neonatal intensive care nurse | 405 | -2 years of experience in field<br>-employment in field within last 2 years |
| Neonatal nurse clinician/practitioner | 0[a] | -2 years of experience in field or certification as an NICU nurse<br>-graduation from neonatal nurse clinician/practitioner program that is at least 12 weeks long and acceptable to NAACOG, or 4 years of RN employment in NICU with at least 2 years as a neonatal nurse practitioner or clinician |
| OB/GYN nurse practitioner | 2,284 | -completion of formal nurse practitioner progam that has at lest 3 months of OB/GYN content, is at least 12 weeks in length, and is found acceptable to NAACOG |
| Maternal, gynecologic, and neonatal nursing (joint certification with ANA) | 414 | no longer offered |

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[a] First examination will be offered in 1983.

APPENDIX 5

# Projections of Registered Nurse Supply and Requirements

The projections of the supply and demand for registered nurses (RNs) made by the study committee are based on and developed from earlier work supported by the Department of Health and Human Services (DHHS), Health Resources Administration (HRA). This appendix describes in some detail the methods contributing to both the DHHS projections and those of our study, discusses methods and findings of the study, and makes some comparison of the study conclusions with those made most recently by the DHHS, contained its Third Report to Congress.[1]

As is indicated in Chapter II, supply and requirement models are based on assumptions about future population dynamics, health service delivery patterns, and nurse utilization trends. Different assumptions about any of these factors will affect resulting RN projections. Because it is difficult to anticipate how these factors may change and interact in the future, some caution must be exercised in using model projections.

## Current Supply of Registered Nurses

The best data available on the current supply of RNs in the United States are those contained in The Registered Nurse Population, an Overview. From the National Sample Survey of Registered Nurses, November, 1980.[2] Those figures, in final form, were released by the HRA in July 1982. The report estimated that 1,272,900 RNs were employed in nursing--a sharp and unexpected increase of about 30 percent over the 1977 Sample Survey, which had led to an estimate of a total of 987,200 in that year.

## Projections of the Supply of Registered Nurses

The DHHS and its predecessors over a long period have made or sponsored a number of projections of the supply of RNs. These projections were made on the basis of either the total number of living graduates of nursing schools, or the number of RNs currently licensed, the latter being the basis for the projections contained in the recent Third Report to Congress.[3,4,5,6] Only the most recent projections of the DHHS are discussed below.

## DHHS Projections

These projections responded to the requirements of Section 951 of P.L. 94-63, which directed that the adequacy of the supply of RNs for the future be considered according to level of educational preparation, within each state as well as nationally. Projections were made to the year 2000 and were included in the Third Report to Congress.[7] The following description of the projection methods is abstracted from that report.

Three types of projections were made on a state-by-state basis:

- the RN population--those with current licenses to practice
- the RN supply--all those practicing nursing
- the full-time equivalent (FTE) supply--RNs practicing full time plus one-half of those practicing part time.

The projections were divided into three levels of highest educational preparation: associate degree (AD) or diploma, baccalaureate, and master's and doctorate.

The projections show the RN population and supply on an annual basis as a function of three characteristics of that population: (1) the 50 states and the District of Columbia, (2) three levels of highest educational preparation, and (3) age groups.

The projections were initiated from a data set based on the 1977 National Sample Survey of Registered Nurses amplified by data from the 1972 Inventory of Registered Nurses.[8,9] (The Third Report to Congress noted that data from the National Sample Survey of Registered Nurse, November 1980 survey would be used to update the data base, when it became available.) For "current estimates," graduation data were taken from the annual surveys made by the National League for Nursing (NLN).[10] Separate models were developed that project the number of graduates from the varying types of programs. Other data inputs included migration factors, mortality rates, licensure phenomena, age distributions, and activity rates.

With the exception of the assumptions regarding graduations, only one set of assumptions was used for all projection series. In all series, assumptions were based on the following data and considerations.

- *Mortality rate* To determine the losses through death, age-specific mortality rates based on 1976 life tables for white females were used throughout the projection period.
- *"Net loss" rates* In addition to mortality, changes in the RN population result from lapsed and reinstated licenses. A factor providing for an "age-specific net loss" in licenses was derived from data obtained from the American Nurses' Association's annual licensure statistics, the 1972 Inventory of Registered Nurses, and the 1977

National Sample Survey of Registered Nurses.[11,12] The same rate was used throughout the projection period.

- New licensees The number of new licensees from United States nursing education programs was determined from 1977 state board examination passage rates. These rates were kept constant throughout the projection period. To account for the new licensees graduated elsewhere than in the United States, a constant total of 3,700 foreign nurses per year was included. This estimate was based on 1976 licensing data. The age distribution of both the United States and foreign new licensees was based primarily on data from 1977 National Sample Survey of Registered Nurses.[13]
- Activity rates (employed RNs/all RNs currently licensed) Current activity rates were maintained throughout the projection period on the assumption that the rates have nearly peaked for the younger nurses and that the overall rate was the highest it has been. The rates used are age specific.

Assumptions about nursing education graduations for each DHHS series were as follows:

- Series A was developed as a "middle" level projection. It represents a "baseline," considering recent trends. In Series A, diploma program admissions continue at a rate consistent with the prior data, if it is assumed that some programs will operate throughout the projection period. Associate degree admissions are assumed to be most likely for 17- to 34-year-old females, and future admissions to these programs would decline slightly as a proportion of this population group. Baccalaureate and diploma admissions are assumed to come basically from new high school graduates and together, these two groups are examined as a proportion of new high school graduates. This proportion continues the negative trend it has shown in the late 1970s. The graduation rates applied to these admissions data were 73 percent for diploma, 69 percent for AD, and 63 percent for baccalaureate. Post-RN baccalaureates from generic programs are a function of the basic graduates from these programs, with an additional fixed factor for those graduating from nongeneric programs. Master's degree graduates were determined from the maintenance of the linear trend in the number of programs, maintenance of the increases in average enrollments per program, and the stabilization at 50 percent of the proportion of full-time students. Graduations were determined to be 35 percent of enrollments, the proportion noted for the 2 years the full-time enrollment rate was 50 percent. To account for the master's graduates from non-NLN-counted nursing programs, an additional fixed factor was applied to the graduate totals.
- Series B is the "higher" series. It is based on the assumption that current concerns about RN shortages would lead to reversals in the present admissions trends to basic programs, to increased higher level educational opportunities, and to an increased number of students. Specifically, assumptions made define diploma program trends as the same as those in Series A, but reverse AD program trends

in that series. Thus, in Series B, the decreasing trend in the proportion of 17- to 34-year-old females entering AD programs would reverse so that, about 1985-1986, it would become the proportion it was in the mid-1970s and remain at that level through the rest of the projection period. Also, the trend of the combined baccalaureate and diploma admissions would reverse and by 1985-1986 become the proportion it was in the early 1970s and remain at that level through the projection period. The proportion graduating from baccalaureate programs would become 65 percent, the estimate for the latest data, while the rates for the other programs would remain the same as those in Series A. In addition to these higher levels of basic nursing graduates, it was assumed that the number of master's degree programs would increase to 328 by the end of the projection period. It was further assumed that the trend toward part-time enrollment would reverse so that by the end of the projection period, 75 percent of the enrollees would be full time. The increase in the availability of "nursing" master's programs would offset, to some extent, the number of students attending "non-nursing" programs.

- Series C is based on the premise that present concerns about the baccalaureate degree as the entrance level into practice would lead to a sharp decline in the proportion of 17- to 34-year-old females entering AD programs and a sharp increase in the number of baccalaureate programs available. Admissions to diploma programs were determined as in Series A, and the master's degree assumptions as in Series B.
- Series D is the most constrained set of projections, combining diploma and baccalaureate projections from Series A and the AD projection from Series C. In essence, it assumes that current discussions about the entrance level into practice will lead to a sharp decline in admissions to AD programs, but with no offsetting increase in baccalaureate admissions. Series D also maintains the type of trends noted in the master's degree programs in Series A.

In all of the above series, it is projected that the number of graduations by the year 2000 will be lower than the 77,000 being graduated currently. Series B, the most "optimistic" of the graduation projections, shows only a moderate decline following an increase in the 1980s. Series A, which provides for no changes in recent trends, shows a continual decrease until total graduations reach the 1971-1972 level of 51,300. Series D projects even further decreases in the overall number of graduates to levels prevalent in the latter half of the 1960s (Table 1).

Graduates of the academic year 1989-1990 are shown in Table 1. The national active supply as of January 1, 1991, which includes the 1990 graduates, under the four DHHS series is shown in Table 2.

TABLE 1 Four DHHS Projections of the Number of Graduates of Basic Programs Preparing Registered Nurses, 1990

| | 1990 Graduates--DHHS Projection Series | | | |
|---|---|---|---|---|
| Graduates | A | B | C | D |
| Associate degree | 34,200 | 41,500 | 24,400 | 24,400 |
| Diploma | 7,100 | 7,100 | 7,100 | 7,100 |
| Baccalaureate | 20,800 | 30,000 | 31,800 | 20,800 |
| TOTAL | 62,100 | 78,600 | 63,300 | 52,300 |

SOURCE: Secretary, DHHS. Third report to the Congress, February 17, 1982, Table 22, p. 153 (see Reference 1 for complete citation).

TABLE 2 Four DHHS Projections of the Supply of Employed and Full-Time Equivalent Registered Nurses, January 1, 1991

| HRA | Registered Nurses | |
|---|---|---|
| Projection Series | Active | Full-Time Equivalents |
| A | 1,493,700 | 1,264,100 |
| B (high) | 1,580,400 | 1,340,500 |
| C | 1,458,400 | 1,260,400 |
| D (low) | 1,445,900 | 1,223,700 |

SOURCE: Secretary, DHHS. Third report to the Congress, February 17, 1982, Tables 24, 25, 26, and 27, pp. 155-158 (see Reference 1 for complete citation).

## The Study's Projections

These projections were developed both to utilize the new data on the supply of RNs, which became available with the National Sample Survey of Registered Nurses, November 1980, and to explore the effect of alternative assumptions as to graduations and activity rates. Because the committee believed it reasonable to view the future in terms of the time elapsing from the present to the end of the year 1990, the estimates take into account the classes graduating in that year. The projections are national only and are made at five levels of highest educational preparation: associate degree, diploma, baccalaureate, master's degree, and doctorate.*

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*For a more detailed discussion, see West, M.D. The projected supply of registered nurses, 1990: Discussion and methodology (see Reference 30 for complete citation).

Three series of projections were made. They used as a population base the number of living graduates of nursing schools in the United States in 1980. This number, by age group, was calculated by applying appropriate mortality rates for white females to the graduates of each class from 1928 to 1980, by program type. To this total was added the number of graduates of foreign schools who have been licensed in the United States. This base population was updated to 1990, using appropriate age-specific death rates based on 1978 life tables for white females.

Activity rates for November 1980 were computed by calculating the ratio of the number of employed RNs in each age group, as reported in the National Sample Survey of Registered Nurses, November 1980, to the number of living nurses in that age group.[14] Alternative assumptions as to future activity rates were the following:

1. Because labor force participation rates of all women have been rising for many years, as have such rates for RNs, RN activity rates will rise by 3 percent between 1981 and 1990; or

2. Nursing labor force participation rates will remain constant from 1980 to 1990.

The Study's Intermediate Projection Prepared for normative purposes, this projection assumed that the states would continue financial support of nursing education and that general federal aid to postsecondary students would continue at levels adequate to maintain present educational opportunities; that nursing would continue to draw new students from a wide age range at rates that represent the average of the years 1978 to 1980; and that graduations as a proportion of admissions would stay constant. Under these assumptions, graduations in 1990 would total 70,000, or 6.5 percent fewer than in 1981. Within this total, graduates of AD programs, after some rise, would return to the 1981 level; while baccalaureate graduates would decline by 6.3 percent and diploma graduates by one-third (see Table 3).

TABLE 3 Number of Graduates of Basic Registered Nurse Programs, 1981 Actual, and Study Intermediate Projections 1990 and 1981-1990, Cumulative Total

| Program Type | 1981 | 1990 | 1981-1990 |
|---|---|---|---|
| Associate degree | 37,183 | 37,600 | 388,900 |
| Diploma | 12,903 | 8,500 | 111,300 |
| Baccalaureate | 24,804 | 23,900 | 246,500 |
| TOTAL | 74,890 | 70,000 | 746,700 |

SOURCE: West, M.D. Projected supply of nurses, 1990: Discussion and methodology, Tables 6, 7, 8, 9 (see Reference 30 for complete citation).

The Study's Low Projection  It was assumed that nursing schools will not continue to prepare students at the rates shown in the intermediate projections, but that there will be a 10-percent drop below the intermediate level. The number of graduates in 1990 would then fall to 63,000, as shown in Table 4.

TABLE 4 Number of Graduates of Basic Registered Nurse Programs, Study's Low Projections, 1990 and 1981-1990

| Program Type | 1990 | 1981-1990 |
|---|---|---|
| Associate Degree | 33,400 | 337,200 |
| Diploma | 8,500 | 111,300 |
| Baccalaureate | 21,100 | 242,300 |
| TOTAL | 63,000 | 730,800 |

SOURCE: West, M.D. Projected supply of nurses, 1990: Discussion and methodology, Tables 6, 7, 8, and 9 (see Reference 30 for complete citation).

Since the potential graduates of baccalaureate programs who will complete their program in 1986 are already enrolled, it is assumed that the greatest change would be in the shorter AD programs.

In this low projection it is also assumed that labor force participation rates will remain at 1980 levels.

The Study's High Projection  It was assumed that admissions to nursing schools will continue to rise during the 1980s, so that total graduations would reach 76,900 by 1990, 2.7 percent above the 1980 level (see Table 5).

TABLE 5 Number of Graduates of Basic Registered Nurse Programs, Study's High Projections, 1990 and 1981-1990

| Program Type | 1990 | 1981-1990 |
|---|---|---|
| Associate 42,600 | 406,400 | |
| Diploma | 8,500 | 111,300 |
| Baccalaureate | 25,800 | 250,800 |
| TOTAL | 76,900 | 768,500 |

SOURCE: West, M.D. Projected supply of nurses, 1990: Discussion and methodology, Tables 6, 7, 8, and 9 (see Reference 30 for complete citation).

Within this total there would be, compared to 1981, a 4-percent increase in baccalaureate graduates and a 15-percent increase in AD graduates. It is assumed that labor force participation rates will rise as in the intermediate projection.

To project the highest educational level attained by RNs, the following assumptions were used in each of the three projection series:

- Post-RN baccalaureate degrees There were 8,416 RNs with diplomas or ADs who completed requirements for the baccalaureate degree in 1981, compared to 2,200 in 1971. It is assumed that the number will continue to grow, reaching 14,000 graduates per year by 1990.
- Master's degrees In 1971, there were 2,100 master's degrees granted in nursing; by 1981, the number had risen to 5,000. It is assumed that the number will continue to grow, reaching 9,500 in 1990. Smaller numbers of RNs will receive master's degrees in other fields.
- Doctoral degrees The number of doctoral degrees in nursing granted rose from 41 in 1971 to 125 in 1980. It is assumed that the number will reach 400 in 1990. The number receiving doctoral degrees in other fields is also assumed to increase.

Total Projected Supply The total number of active RNs under each of these three study projections, together with the corresponding figures for FTE RNs, are shown in Table 6.

TABLE 6 Study's Projections of the Supply of Employed Registered Nurses and Full-Time Equivalents, December 31, 1990

| | Registered Nurses | |
|---|---|---|
| Study Group Projection | Employed | Full-Time Equivalent[a] |
| High | 1,728,000 | 1,451,000 |
| Intermediate | 1,710,000 | 1,436,000 |
| Low | 1,643,000 | 1,379,000 |

[a] The number of full-time equivalent (FTE) nurses is calculated by adding half of the number of part-time nurses to the actual number of full-time nurses, assuming that the ratio of full-time to part-time workers will remain as in 1980.

SOURCE: West, M.D. Projected supply of nurses, 1990: Discussion and methodology (see Reference 30 for complete citation).

The effects of the projected changes in number of graduates by highest educational preparation are illustrated in Table 7, which compares the findings of the 1980 RN Sample Survey with the study's intermediate projection for 1990.[15]

TABLE 7 Estimated Employed Registered Nurses, 1980, and Study's Intermediate Projection, 1990

| Highest Educational Preparation | Employed RNs November 1980[a] | December 1990[b] | Difference |
|---|---|---|---|
| Associate | 256,200 | 475,000 | +218,800 |
| Diploma | 645,500 | 614,000 | - 31,500 |
| Baccalaureate | 296,200 | 491,000 | +194,800 |
| Master's | 65,200 | 124,200 | + 59,000 |
| Doctorate | 3,000 | 5,800 | + 2,800 |
| Unknown | 6,800 | - | - 6,800 |
| TOTAL | 1,272,900 | 1,710,000 | +437,100 |

[a] SOURCE: DHHS, HRA. The registered nurse population, an overview. From national sample survey of registered nurses, November, 1980, Table 3, p. 11 (see Reference 2 for complete citation).

[b] SOURCE: West, M.D. Projected supply of nurses, 1990: Discussion and methodology, Table 16 (see Reference 30 for complete citation).

## Comparison of the DHHS and the Study Supply Projections

The projections of the study are considerably higher than those made by the DHHS. The reasons for these differences are found primarily in the differing bases used for the two sets of projections--that of DHHS being the 1977 National Sample Survey of Registered Nurses and that of this study group being the 1980 RN Sample Survey. The effect of the use of the newer base is to raise the study projections by 109,100 over those of the DHHS.

Comparing projections for the two sets for December 1990 to January 1991, the total number of active RNs projected by the study's intermediate projection is 1,710,000 while the DHHS Series A totaled 1,493,700. The major elements of the difference between the totals of the two projections are shown in Table 8. The difference is primarily due not to methodology but to differences in assumptions, particularly the underestimated increase in employment between 1977 and 1980; differences in projected rates of labor force participation, which are assumed to rise in the study group's series, but not in that of the DHHS; and differences in projected numbers of graduates. The differences between the study's intermediate and the DHHS Series B are smaller (1,710,000 and 1,580,000) because the Series B projects higher graduation levels.

TABLE 8 Study Group Intermediate Supply Projection and DHHS Supply Projection (Series A)

| Projection | Active RNs |
|---|---|
| Study's intermediate projection Dec. 1990[a] | 1,710,000 |
| DHHS projection (Series A) Jan. 1991[b] | 1,493,700 |
| Difference | 216,300 |
| Elements of Difference | |
| 1977-1980 employment estimate increase | 109,100 |
| Higher labor force participation | 50,200 |
| Higher new graduates, 1981-1990 | 52,100 |
| Other | 4,900 |

[a] SOURCE: West, M.D. Projected supply of nurses, 1990: Discussion and methodology (see Reference 30 for complete citation).
[b] SOURCE: Secretary of Health and Human Services. Third report to the Congress, February 17, 1982, Table 24, p. 155 (see Reference 1 for complete citation).

The study's intermediate projections also include a higher proportion of employed RNs with baccalaureate and higher preparation than do those of the DHHS. These differences are also related to the sharp increase in the number with higher levels of preparation that was reported for 1980 as compared to 1977 (see Table 9).

TABLE 9 Number of Employed Registered Nurses by Highest Nursing-Related Educational Preparation, 1977 and 1980

| Educational Preparation | 1977[a] | 1980[b] | Increase | Percent Increase |
|---|---|---|---|---|
| Less than baccalaureate | 752,600 | 901,700 | 149,100 | 19.8 |
| Baccalaureate | 180,500 | 296,200 | 115,700 | 64.1 |
| Master's and above | 43,300 | 68,200 | 24,900 | 57.5 |
| Not reported | 1,900 | 6,800 | 4,900 | -- |
| TOTAL | 978,200 | 1,272,900 | 294,700 | 30.1 |

[a] SOURCE: DHHS, HRA. Source book--nursing personnel, Table 11, p. 19 (see Reference 31 for complete citation).
[b] SOURCE: DHHS, HRA. The registered nurse population, an overview. From national sample survey of registered nurses, November, 1980, Table 3, p. 11 (see Reference 2 for complete citation).

The differences between the DHHS Series A for January 1, 1991, and the study's intermediate projection for December 31, 1990, by highest level of educational preparation, are shown in Table 10.

TABLE 10 Supply of Active Registered Nurses by Highest Level of Educational Preparation, Projections of DHHS and Study Group, December 1990 to January 1991

| Highest Educational Preparation | DHHS Series A[a] | Study's Intermediate Projection[b] |
|---|---|---|
| Associate and diploma | 999,200 | 1,089,000 |
| Baccalaureate | 380,600 | 491,000 |
| Master's and doctorate | 113,800 | 130,000 |
| TOTAL | 1,493,700 | 1,710,000 |

[a] SOURCE: Secretary, DHHS. Third report to the Congress, February 17, 1982, Table 24, p. 155 (see Reference 1 for complete citation).
[b] SOURCE: West, M.D. Projected supply of nurses, 1990: Discussion and methodology, Table 16 (see Reference 30 for complete citation).

## Registered Nurse Requirement Projections

### DHHS Projections

For many years the DHHS and its predecessor, the Department of Health, Education, and Welfare, have made studies of projected requirements for RNs. In looking at future requirements, this agency has supported the development of models that provide tools for the exploration of factors that must be taken into account in examining future requirements. The two most useful of these are the "historical trend-based demand model," which provides techniques for examining trends in the provision of nursing service in major work settings, and the "criteria-based" or "judgment-of-need model," which proposes staffing and educational preparation standards--in great detail--for essentially the same work settings. The two techniques can be used to consider both state and national requirements.

### The Historical Trend-Based Demand Model*

This model was first developed in 1974, with several series of projections to 1985. These projections were based on scenarios that included assumptions as to introduction of national health insurance, increased HMO enrollment, and RN role reformulation.[16] The assumptions of the model were updated in 1980, taking into account new data from the 1977 National Sample Survey of Registered Nurses.[17] The figures from that update, projected to the year 2000, are discussed in the Third Report to Congress.[18] (Now that figures from the 1980 Sample Survey are available, further updates by the HRSA are expected.) The model includes three major components, or modules: population, demand for services, and nurse manpower requirements.

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*Abstracted in part from the Third report to the Congress, February 17, 1982, pp. 91-102 (see Reference 1 for complete citation).

The Population Module This module used projections of the civilian population of the United States (Series II) made by the Bureau of the Census.[19] The population was projected to grow from 214.6 million in 1977 to 220.0 million by 1980 and to 241.4 million by 1990. A separate projection series was developed for the population enrolled in health maintenance organizations (HMOs).

The Demand for Services Module This module directly calculated per capita utilization rates for six areas of health services--hospital inpatient units, hospital outpatient units, nursing homes, ambulatory care at HMO "clinics," physicians' offices, and home health. Per capita patient utilization rates were projected on the basis of 1972-1977 trend data, and the projected population was multiplied by the appropriate projected per capita utilization rate to obtain the total service demands for each of the six settings.

The Nurse Manpower Requirement Module This module calculated aggregate RN requirements based on utilization trends of RN per unit of service and the total service demands calculated in the service module in each of the above service areas. Requirements for nurse educators, community health nurses, private duty nurses, and RNs in other settings were calculated on the basis of historical time trends rather than specific utilization rate projections. The major data source was the 1977 National Sample Survey of Registered Nurses.[20] Independent data for hospitals, nursing homes, and public health services were also used. The RN utilization rates so derived, with historical growth rates appropriately adjusted for assumed future trends, were considered requirements for the purposes of projections.

## Model Projections

The total January 1990 FTE RN requirements under the above assumptions were projected by the DHHS to be 1,245,400. This total and its major components by employment setting are shown in Table 11.

TABLE 11 DHHS Historical Trend-Based Demand Model Full-Time Equivalent Registered Nurses Requirements, January 1990

| Area of Practice | January 1990 |
|---|---|
| Hospital | 899,900 |
| Nursing home | 93,300 |
| Community health | 101,100 |
| Physician's office | 71,900 |
| Nursing education | 47,100 |
| Other | 32,000 |
| TOTAL | 1,245,400 |

SOURCE: From Secretary, DHHS. Third report to the Congress, February 17, 1982, Table 37, p. 174 (see Reference 1 for complete citation).

## The Criteria-Based Model

A second major set of projections in the Third Report to Congress is derived from a model officially referred to as the "criteria-based model" developed by the Western Interstate Commission on Higher Education (WICHE).[21] The study group refers to this as the "judgment-of-need" model. It was designed to establish a framework for developing RN and LPN requirements making use of professional staffing and educational preparation criteria for nurses in a wide variety of work settings. A national panel of consultants, including nurses involved in service and education, hospital administrators, and other leaders in the health field, was established in 1977 to develop such assumptions and criteria for 1985. Staffing and educational criteria for optimal patient care were established in accordance with a consensus of professional judgment, by unit of service, by detailed field of employment.

In 1980 a new workshop was held to augment, review, and revise existing criteria for hospitals, nursing homes, and community health services. An adjusted 1990 lower bound was proposed as a level that all states could meet by that year, while an upper bound represented a goal to be met by states exceeding the lower bound.

The translation of these professional criteria into nursing requirements was a separate undertaking. This translation was made by applying the WICHE criteria to the health service utilization and population trends used by the historical trend-based model. The criteria thus applied resulted in 1990 FTE nursing personnel requirements, as shown in Table 12.

TABLE 12 DHHS Judgment-of-Need Full-Time Equivalent Registered Nurse Requirement Projections, January 1990

| Personnel | Lower Bound | Upper Bound |
|---|---|---|
| Registered nurses | 1,784,000 | 2,373,000 |
| Associate degree/diploma | (767,700) | (834,200) |
| Baccalaureate | (747,500) | (1,165,100) |
| Master's/doctoral | (269,200) | (373,300) |
| Licensed practical nurses | 331,000 | 334,000 |
| Aides | 524,000 | 589,000 |

SOURCE: Secretary of Health and Human Services. Third report to the Congress, Table 40, p. 177 (see Reference 1 for complete citation).

## Comparison of Historical Trend-Based Demand and Judgment-of-Need Lower Bound Projections

The lower-bound projection of the judgment-of-need model for 1990 was 43 percent higher than that of the historical trend-based demand model, as shown in Table 13.[22] The requirement projections of the two models are approximately the same for hospitals and physicians' offices; however, there were major differences in those for nursing homes and community health services. These differences reflect the view of the WICHE national panel that present RN staffing patterns in nursing homes and community health settings are grossly inadequate.[23]

TABLE 13 DHHS Projections of Full-Time Equivalent Registered Nurses Required Under Two Sets of Staffing Assumptions, January 1990

| Area of Practice | Trend-Based Demand Model | Judgment-of-Need Model, Lower Bound | Difference |
|---|---|---|---|
| Hospital | 899,900 | 935,700 | 35,800 |
| Nursing home | 93,300 | 469,900 | 376,600 |
| Community health | 101,100 | 240,500 | 139,400 |
| Physician's office | 71,900 | 66,700 | - 5,200 |
| Nursing education | 47,100 | 37,000 | -10,100 |
| Other | 32,000 | 34,600 | 2,600 |
| TOTAL | 1,245,400 | 1,784,400 | 538,600 |

SOURCE: Secretary, DHHS. Third report to the Congress, February 17, 1982, Table 37, p. 174; and Table 49, p. 176 (see Reference 1 for complete citation).

The Study's Illustrative Demand Projections

To determine the impact of several possible health care changes on future RN requirements, the study committee developed specifications for three demand illustrations which were computed for the study by the DHHS, using adjustments to the existing historical trend-based demand model. Assumptions and resulting projections are the responsibility of the study, not of the DHHS. The present structure of the model was discussed earlier in this appendix. In developing the study illustrations, original scenarios incorporated by Vector Research, Inc. in the first set of published results of the historical trend-based model were reviewed.[24]

The forecasting exercise that the study undertook was intended to respond to the congressional charge to determine the future need for nurses. We have emphasized in Chapter II the importance of examining approaches for predicting "demand" as a means of understanding future "needs." The historical trend-based demand model that the study committee selected as the most practical for its purposes is driven by two important sets of variables. These are, first, changes over time in the utilization of health services by the population and, second, the rates at which RN services are used in various components of the health care system.*

There are many complex forces at work that affect these two sets of variables now, and policy changes can be expected to influence them in the future. In its charge, Congress recognized the potential impact of demand on financing changes like national health insurance and new utilization patterns that might result from such developments as an increased use of ambulatory facilities. It is well beyond the scope of this study to posit to what extent basic health policies might change in the next few years and the multivariant results that might arise from an interaction of these new policies. Rather, the study group believed it could provide insight into the future by three relatively simple illustrations that would test how much the demand for RNs might be altered by the assumed effects of certain changes in the financing climate, which, in turn, would tend to produce changes in how patients use health care and how programs and institutions utilize RNs.

In making illustrative projections using the historical trend-based demand model, time, resource, and technical limitations permitted only surrogate adjustments compatible with the model structure. No general population adjustments could be made in the model owing to the unavailability of 1980-1990 population projections based on the 1980 census. For each illustration, the model baseline was updated to approximate FTE RN estimates derived from the 1980 RN

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*A fuller discussion of this model and the modifications in the variable model components adopted for purposes of the study illustrations is found in Bauder, J. Methodologies for projecting the nation's future nurse requirements (see Reference 25 for complete citation).

Sample Survey.[26] Also, the first two illustrations were updated to reflect HMO enrollment projections made by the Department of Health and Human Services' Office of Health Maintenance Organizations for the period 1980-1990. This update projects slightly more than 9 percent of total population enrolled in 1990.[27] The third illustration, as noted below, was characterized by an assumption that this increase would rise to 30 percent by the end of 1990. Under all three illustrations, the HMO population is assumed by the model to use 44 percent of the per capita hospital inpatient days of the non-HMO population. This rate is based on the experience of traditional HMOs (prepaid group practice plans).[28] To the extent that this rate may be considered too low for future HMO experience with a larger enrollment population, the results of the illustrations may understate somewhat the volume of short-term inpatient utilization and the resultant demand for nurses in this sector (see Table 18).

The assumptions for the projections are described in Chapter II. The specifications and results are summarized in Table 14.

TABLE 14 Illustrations of 1990 Registered Nurse Requirements (FTE) Under Three Series of Study Group Assumptions

| Illustration | Specifications | RNs (FTE) Required December 1990 |
|---|---|---|
| I. | National Health Insurance<br>Updates RN utilization data and HMO enrollment projections; assumes continued upward health service utilization trends as in the projections for the Third Report to Congress. | 1,471,600 |
| II. | Cost Containment<br>Updates RN utilization data and HMO enrollment as in Illustration I; holds ICU beds and non-ICU patient days, outpatient visits, and nursing home resident days at projected 1985 rates until 1990; however, allows ratio of RNs to non-ICU inpatient days to rise as in Illustration I. | 1,348,000 |
| III. | Increased Use of Ambulatory Care<br>Updates RN utilization data; shifts to less use of hospital inpatient care and increased ambulatory services as the population's use of HMOs or similar services increases to 30 percent by 1990; doubles per capita home care visit rate. | 1,297,600 |

SOURCE: Bauder, J. Methodologies for projecting the nation's future nurse requirements (see Reference 25 for complete citation).

The adjustments made by the illustrations in the per capita health service utilization rates of the historical trend-based model are shown in Table 15.* The significant difference in per capita service rates for non-ICU inpatient days in Illustration III result from differences in the internal treatment by the model of assumed reduced utilization by HMO-type populations. In the original model, because HMO enrollment was not a major influence, inpatient per capita savings attributable to

TABLE 15 Comparison of Per Capita Health Service Rates, Historical Trend-Based Demand Model and Study's Illustrative Projections, December 1990

| Practice Setting Per Capita Service | DHHS Projections Historical Model | Study Group Illustrative Projections[c] I | II | III |
|---|---|---|---|---|
| ICU bed day | 0.134271 | 0.129987 | 0.104286 | 0.104286 |
| Non-ICU inpatient day | 1.224304 | 1.224305 | 1.224305 | 1.001157 |
| Hospital out-patient visit | 1.065468 | 1.065468 | 1.005471 | 0.745550 |
| Physician's office visit | 5.029299 | 5.029302 | 5.029302 | 3.529225 |
| HMO clinic visit (per enrolled member) | 4.329707 | 4.329700 | 4.329700 | 4.329711 |
| Nursing home resident day | | | | |
| Type 1[a] | 2.318763 | 2.318764 | 2.318764 | 2.318762 |
| Type 2[b] | 0.376272 | 0.376273 | 0.376273 | 0.376273 |
| Home Visit | 0.151145 | 0.151145 | 0.151145 | 0.309846 |

[a] Type 1: One or more RNs or LPNs employed and 50 percent or more of the residents receiving nursing care.

[b] Type 2: Less than 50 percent of residents receiving nursing care, irrespective of nurse employment.

[a,b] SOURCE: "Inpatient Health Facilities as Reported From the 1973 MFI Survey," Vital and Health Statistics Series No. 14, No. 16, NCHS.

[c] SOURCE: DHHS, HRA. Unpublished computer runs 100, 110, 120, and 140 on RN state and national requirements model, revised and updated, July and August 1982, p. 3.

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*In this table and the two following, all model variables are carried out to four or more decimal places in order to show areas of differences. The distinctions may result in small differences in RN requirements in those settings where nurse utilization is small, but in significant differences in practice settings such as short-term inpatient non-ICU and ICU hospital service where RN requirements are large.

HMO members was compensated for by increasing the rates of non-HMO patients on grounds that existing data showing per capita utilization in the total short-term hospital system appear to have shown no net decrease in overall utilization. The model also operated this way for the first two illustrations. In the third illustration, however, the study specified that the hospital utilization savings attributable to the part of the population using HMO-type modes of care should not be absorbed and distributed over the entire population, but should be netted out, the result being a significantly lower per capita factor.

RN service ratios in the model under the three sets of assumptions the study group chose to illustrate are shown for selected settings in Table 16.

TABLE 16 Comparision of Selected Registered Nurse Per Service Ratios, Historical Trend-Based Demand Model and Study's Illustrative Projections, December 1990

| Practice Setting Ratio of RNs | DHHS Projections Historical Model | Study Group Illustrative Projections I | II | III |
|---|---|---|---|---|
| ICU bed day | 2.45471 | 2.45471 | 2.43832 | 2.43832 |
| Non-ICU inpatient day | 0.63026553 | 0.74969667 | 0.65011829 | 0.74969667 |
| Hospital outpatient visit | 0.00039008 | 0.00042960 | 0.00042675 | 0.00042960 |
| Physician's office visit | 0.2785 | 0.2693 | 0.2693 | 0.0983[a] |
| HMO visit | 0.000099 | 0.000099 | 0.000099 | 0.000099 |
| Nursing home resident day[b] | | | | |
| Type 1 | 0.05766 | 0.06035 | 0.06027 | 0.06035 |
| Type 2 | 0.02457 | 0.02801 | 0.02802 | 0.02801 |
| Home visit | 0.0005335 | 0.0008259 | 0.0008259 | 0.0008259 |

[a] As noted in Chapter II, the deep drop in nurse per service ratio and in resulting nurse requirements in physicians' offices under Illustration III can be discounted; it appears to be only partially attributable to a shift in patient utilization by HMO services. It may also be due, in part, to the fact that the existing model was not designed to accommodate such large increases in assumed HMO enrollments, which cause correspondingly large decreases in non-HMO physicians' offices. The resulting population may reflect the manner in which model components interact in the treatment of the nurse productivity factor in ambulatory care.

[b] See Table 15 footnote for explanation of Type 1 and Type 2.

SOURCE: DHHS, unpublished computer runs 100, 110, 120, and 140 on RN state and national model requirements model, revised and updated, July and August 1982, pp. 53-54.

In order to visualize how these model variables interact to produce FTE RN requirements, the variables dealing with ICU utilization are set out in Table 17.

TABLE 17 Comparison of Output Regarding Intensive Care Units Made by the HRA Historical Trend-Based Demand Model and the Study's Three Illustrations, January, 1980, 1985, 1990

| DHHS Projections Model Output | HRA Historical Model Projections | Study Group Illustrative Projections | | |
|---|---|---|---|---|
| | | I | II | III |
| Per capita demand | | | | |
| 1980 | 0.096401 | 0.091662 | 0.091662 | 0.091662 |
| 1985 | 0.114511 | 0.109993 | 0.019993 | 0.109993 |
| 1990 | 0.134271 | 0.129987 | 0.104286 | 0.104286 |
| RNs per ICU bed | | | | |
| 1980 | 2.11045 | 2.11045 | 2.11045 | 2.11045 |
| 1985 | 2.43832 | 2.43832 | 2.43832 | 2.43832 |
| 1990 | 2.45471 | 2.45471 | 2.43832 | 2.43832 |
| FTE RN requirements | | | | |
| 1980 | 122,636 | 116,600 | 116,600 | 116,600 |
| 1985 | 176,508 | 169,500 | 169,500 | 169,500 |
| 1990 | 219,759 | 212,700 | 169,500 | 169,500 |

SOURCE: DHHS, HRA. Unpublished computer runs, 110, 120, 140 on RN state and national model, revised and updated, July and August 1982, pp. 38-40.

As illustrated above, the per capita ICU demand rates and RNs per ICU bed ratios were held constant between 1985 and 1990 in Illustrations II and III. This resulted in ICU FTE RN requirements being held at 169,500 in both illustrations--a 45 percent increase over 1980. In contrast, Illustration I did not hold per capita demand rates or RNs per ICU bed ratios constant between 1985 and 1990. As a result FTE RN requirements rose from 116,600 in 1980 to 212,700 in 1990--a 92-percent increase.

## Comparison of Historical Trend-Based Model and Illustrative Projections

The study's December 1990 demand projection totals were moderately higher in the aggregate than the historical trend-based demand model's projection, as is shown in Table 18. Illustrations I, II, and III were 16, 6, and 2 percent higher, respectively. These differences were primarily due to the incorporation of the more up-to-date 1980 RN Sample Survey data in the three illustrations.[29]

Striking differences were found, however, in comparing the practice area projections of the illustrations and the historical trend-based model. For example, a 30 percent increase in HMO-type services in Illustration III resulted in decreased RN requirements for non-ICU inpatients, outpatients, and physicians' offices, and increased requirements for HMO clinics. The doubling of the per capita rate of home health visits as an independent variable in Illustration III resulted in substantially increased home care RN requirements.

As is discussed in Chapter II of this report, the three RN supply projections made by the Committee all fall within the wider range of the demand projected by the illustrations. December 1990 supply projections range from 1.38 million to 1.45 million, while requirement projections for the same period range from 1.30 million to 1.47 million. Cautions were expressed in that chapter as to model limitations and the combinations of assumptions.

TABLE 18 Comparison of Historical Trend-Based Demand Model Projections With Study's Three Illustrative Projections, Registered Nurses (FTE) December 1990

| Practice Setting | DHHS Historical Model Projections | Study Group Illustrative Projections | | |
|---|---|---|---|---|
| | | I | II | III |
| Short-term hospital | | | | |
| Inpatient | 713,500 | 799,700 | 688,100 | 653,300 |
| ICU | (219,800) | (212,700) | (169,500) | (169,500) |
| Non-ICU inpatient | (476,500) | (569,800) | (501,300) | (466,600) |
| Nursing administration | (17,200) | (17,200) | (17,200) | (17,200) |
| Hospital outpatient | 100,800 | 111,400 | 104,400 | 77,900 |
| Other hospital | 106,000 | 113,000 | 113,000 | 113,000 |
| Nursing homes | 95,300 | 100,300 | 100,200 | 100,300 |
| Community health | 82,500 | 123,000 | 123,000 | 123,000 |
| Home care | 19,600 | 30,400 | 30,400 | 62,300 |
| Physicians' offices | 66,300 | 64,000 | 64,000 | 22,500 |
| HMO-type organizations | 6,900 | 10,300 | 10,300 | 32,400 |
| Nursing education | 48,000 | 56,500 | 51,700 | 49,800 |
| Private duty and other | 32,600 | 63,000 | 63,000 | 63,000 |
| TOTAL | 1,271,600 | 1,471,600 | 1,348,100 | 1,297,600 |

NOTE: Detail may not add to totals because of rounding.

SOURCE: DHHS, HRA. Unpublished computer runs 100, 110, 120, and 140 on RN state and national model requirements model, revised and updated, July and August 1982, pp. 38-40.

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## APPENDIX 6

# Doctoral Programs in Nursing: Illustrative Statements of Purpose From School Catalogs

A recent study by the American Nurses' Association (ANA), Nurses with Doctorates, notes that the development of knowledge and skills that are unique to nursing requires that certain of its members be able to produce new knowledge through research, to disseminate or communicate this knowledge, and to apply it in the nursing arena. A major purpose of doctoral education is to develop skills in the conduct of such activities.[1] Doctoral programs are expected to prepare students committed to becoming productive researchers, educators, and clinicians.

The ANA study also observes that doctorally prepared nurses are both cause and effect in the continued professional development of nursing. "They have been and continue to be instrumental in developing a knowledge base unique to nursing. They are also the major faculty resource for doctoral programs in nursing, where they are expected to prepare students who are committed to becoming productive researchers, educators, and clinicians. Growth in the numbers of doctorally prepared nurses may meet the need for research-qualified faculty with ongoing research and for faculty who are actively engaged in practice. Such faculty can serve as mentors and role models for students."[2]

To illustrate the stated purposes and scope of doctoral programs in nursing, our study selected the following examples from catalogs of seven schools of nursing. The programs were chosen to represent a broad range of geographic distribution. Descriptions are quoted verbatim.

### University of Arizona

The purpose of the program leading to the Ph.D. degree with a major in nursing is to prepare clinical nurse researchers who will:

- Add to the body of nursing knowledge through the: synthesis of knowledge from nursing and the related sciences, development of nursing theory, conduct of research; and
- Evaluate the application and utilization of new knowledge in nursing practice; and

- Contribute to the solution of society's health problems through communication with the broader health community.

University of Alabama in Birmingham

The D.S.N. degree program is oriented toward the science of nursing with a triple emphasis on professional practice, research and preparation for the candidate's functional role as an educator, administrator or consultant. The D.S.N. degree program is planned to produce nurse scientists.

Post-master's study is offered in nursing service administration in collaboration with the School of Business and the School of Community and Allied Health, and in advanced oncology nursing in collaboration with the School of Medicine.

The School of Nursing's Center for Nursing Research provides M.S.N. and D.S.N. students with assistance in planning, conducting, analyzing, writing and securing financial support for nursing research. The Center houses a research planning conference room and a large data analysis laboratory equipped with a CRT Terminal, Deswriter, keypunch and calculators.

Faculty research interests include cognitive development, nursing diagnoses, adjustment to widowhood, pain, cultural aspects of health, sleep, history of nursing education in Alabama, benefits and attitudes toward exercise, curriculum issues, parent-infant relationships, energy expenditure and moral development of nurses.

Boston University

The D.S.N. program emphasizes nursing science and the development of intellectual skills and abilities in scholarly analysis related to nursing practice and research. Graduates of the program are prepared to provide leadership in the development of nursing knowledge and practice, and in organization and improvement of health care.

The University of California, San Francisco

The aim of the D.S.N. program is to prepare scholars in nursing who are trained in research and who have attained a depth of knowledge in a substantive area of nursing practice. Graduates of the program are prepared to assume complex leadership roles in the health care system. Courses of study have been developed in various fields within Mental Health and Community Nursing, Nursing in Biological Dysfunction, Family Health Care Nursing, and Social and Behavorial Sciences. Appropriate courses offered by other schools on the San Francisco and Berkeley campuses are used to enhance and support the aims of the program.

The objective of the program for the student is to achieve a high level of comprehension of practice and research in a specialized area of nursing.

Prospective D.N.S. candidates pursue a program of course work in four major areas: research theory and methodology, theory development, social and political aspects of health care, and a nursing focus. Students, with the guidance of advisers, outline specific programs of study that assist them in meeting their professional-academic goals and the requirements for the degree. A program of independent research, developing from initial course work, culminates in the preparation and defense of the dissertation. Doctoral students may have primary affiliation with any department in the School of Nursing.

## University of Michigan

The Ph.D. degree has traditionally been viewed as the degree enabling professionals of many disciplines to conduct research, develop theories, and expand their knowledge base; it is not designed explicitly to develop more advanced clinical practitioners.

The focus of a doctorate in clinical nursing is the attainment of professional and scholarly knowledge sufficient for graduates to pursue research on the delivery of health care by nurses. Moreover, doctorally prepared nurses can address themselves to generalized problems of promoting health in the population and maintaining mental and physical abilities during periods of acute or chronic illness, and at all stages of the life cycle. Nursing, with its emphasis on a bio-psycho-social model of care, has great potential for enhancing the distribution and quality of patient care, encouraging health protection and promotion, and creating cost effective improvements in the organization and delivery of health services.

To pursue excellence in research and theory development in clinical nursing, graduates must be clinically proficient and have extensive preparation in the biophysical and/or behavorial sciences and in research methods and data analysis. As an integrative and applied endeavor, the program draws on the curricular and research resources of other disciplines and institutes within the University.

The purposes of the Ph.D. Program in Nursing are to prepare the graduate to: 1) conduct clinical nursing research, 2) expand the boundaries of nursing knowledge, and 3) provide leadership in the development of nursing theories.

Doctoral study in nursing is designed to prepare scholars who are capable of developing an empirical base for nursing practice in both current and emerging health care systems. A unique strength of the Ph.D. program in nursing is the opportunity to study the interrelationships of physiological, psychological, and social variables as they influence health outcomes. The program is predicated on professional preparation in nursing and includes a strong clinical knowledge base that integrates scientific theory with practice.

To pursue research and theory development in clinical nursing, graduates will be clinically proficient and have advanced preparation in the biophysical and/or behavioral sciences and in research methods and data analysis. As an integrative and applied endeavor, the program draws on the curricular and research resources of other disciplines and institutes within the University.

To best meet the diverse needs of the field of nursing and the goals of the student, the course of study is highly individualized. The overall purpose of the program is to prepare nurses competent in research design, data analysis, and inferential processes, and thus capable of pursuing research related to the delivery of patient care by nurses, and of developing theory oriented toward applications of nursing practice.

### University of Maryland

The purpose of the Ph.D. program in nursing is to prepare scholars and researchers who will advance nursing science, thereby making more effective the practice of nursing, and who will provide innovative leadership to the profession. The program will prepare graduates who:

1) Construct, test and evaluate conceptual models and nursing theories which reflect synthesis, reorganization and expansion of knowledge from nursing and related disciplines;
2) Evaluate and apply appropriate research designs, measures and statistics to the study of nursing phenomena;
3) Conceptualize practice phenomena from the perspective of nursing frameworks and theory;
4) Design, conduct and communicate research relevant to nursing practice;
5) Facilitate the incorporation of new knowledge into nursing practice; and
6) Initiate, facilitate and participate in collaborative endeavors related to the theoretical, conceptual and practical aspects of health care with clients, nurses and scholars from related disciplines.

## University of Washington

The Ph.D. in nursing science program offered by the University of Washington is designed to prepare scholars and researchers for a vital mission--that of developing and expanding the body of scientific knowledge upon which the practice of nursing must ultimately rest. The program provides for rigorous research training related to five fields in nursing science:

- Individual adaptations to health and illness;
- Family adaptations to health and illness;
- Environments: supporting and nonsupporting;
- Clinical therapeutics: interpersonal; and
- Clinical therapeutics: physical.

Those who successfully complete the program are fully prepared to answer the national need for doctorally prepared nursing school faculty. They are equally well qualified to serve in leadership positions in many service agencies requiring nursing scientists to research and advance the state of the art of modern health care delivery.

The doctoral degree is the highest degree conferred by the university. All requirements and regulations leading to the doctoral degree are devices whereby the student may demonstrate present capacities and future promise for scholarly work. The degree is not conferred merely as a certificate to a prescribed course of study and research, no matter how long or faithfully pursued. The program of study for each student will be developed collaboratively by the student and his/her supervisory committee, as appropriate to the student's research interest.

## REFERENCES AND NOTES

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2. Ibid., p. 14.

## APPENDIX 7

# Multivariate Analysis of Determination of Work Status and Wage Rates

### Introduction

The discussion in Chapter VII of nurses' work status in the labor force and factors influencing salary levels incorporated results of multivariate analyses of data from the National Sample Survey of Registered Nurses, November 1980. The methodology and detailed findings of the analyses are presented in the technical notes that follow.

### Work Status

To ascertain the simultaneous effects of a number of independent variables thought to influence nurses' work status--full time, part time, or inactive--data from the National Sample Survey of Registered Nurses, November 1980,* were analyzed using multivariate regression techniques. In this survey sponsored by the Health Resources Administration, Department of Health and Human Services, 30,596 registered nurses currently holding licenses (approximately 80 percent of a probability sample) responded to a questionnaire during the period August 16 to November 2, 1980.

The model employed in the multiple regression analysis is of the form

$$Y_i = a + b_1X_i + b_2X_i + \ldots + b_nY_i + e_i,$$

where $Y_i$ takes the value 1 if the nurse is employed full-time and 0 otherwise, and the X's represent the following categorical independent variables: highest level of nursing education, marital status, presence of children in the home, student status (i.e., whether the respondent is currently pursuing further formal education), sex, race, age,

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*Department of Health and Human Services, Health Resources Administration. *The registered nurse population, an overview. From national sample of registered nurses, November, 1980* (Report 82-5, Revised June 1982). Hyattsville, Md.: Health Resources Administration, 1982.

residence in a non-SMSA geographic region, and years of experience as a nurse. The b's are coefficients that represent the change in Y that can be attributed to the value of the X's relative to the omitted category. Because Y only assumes the value 0 or 1, the expectation of Y, E(Y), may be interpreted as the probability that Y = 1, or the probability that, for example, a nurse is employed full time. Separate models were used to explain part-time and inactive status. The intercept, a, is interpretable as the probability that Y = 1 for the nurse who has all the omitted attributes. The $e_i$ represents random variation in Y not explained by the linear relationship between Y and the X's; it is assumed to have an expected value of zero.

Tables 1-3 present the results of the regression analysis for the probability of full-time, part-time, and inactive status, respectively.

TABLE 1 Regression Estimates of Determinants of Full-Time Work Status for Licensed Registered Nurses

| Independent Variable | Regression Coefficient (t Statistic) | Level of Significance |
|---|---|---|
| Age less than 25 | Omitted | -- |
| Age 25-34 | -.1406<br>(-11.83) | .0001 |
| Age 35-44 | -.3070<br>(-22.90) | .0001 |
| Age 45-54 | -.3645<br>(-25.88) | .0001 |
| Age 55-64 | -.5382<br>(-36.45) | .0001 |
| Age 65 and over | -.9427<br>(-50.60) | .0001 |
| Experience less than 1 year | Omitted | -- |
| Experience 1 year | .0016<br>(.06) | .9503 |
| Experience 2 years | .0250<br>(1.79) | .0731 |
| Experience 3-5 years | .0250<br>(2.10) | .0358 |
| Experience 6-10 years | .0634<br>(5.25) | .0001 |
| Experience 11-15 years | .1670<br>(12.70) | .0001 |
| Experience 16-20 years | .2726<br>(19.07) | .0001 |
| Experience 21-25 years | .3487<br>(22.44) | .0001 |
| Experience of 26 years and more | .3724<br>(25.33) | .0001 |

TABLE 1 (continued)

| Independent Variable | Regression Coefficient (t Statistic) | Level of Significance |
|---|---|---|
| Diploma | Omitted | -- |
| Associate degree | .1514<br>(18.98) | .0001 |
| Baccalaureate degree | .0902<br>(12.79) | .0001 |
| Graduate degree | .1175<br>(9.38) | .0001 |
| Single | .1888<br>(28.58) | .0001 |
| Male | .2126<br>(13.13) | .0001 |
| Children younger than 6 | -.3052<br>(-37.14) | .0001 |
| Children 6 and over | -.0798<br>(-10.82) | .0001 |
| Student | .0237<br>(2.69) | .0072 |
| White | Omitted | -- |
| Black | .2417<br>(16.67) | .0001 |
| Hispanic | .0935<br>(3.93) | .0001 |
| Other minority | .2741<br>(15.05) | .0001 |
| Non-SMSA | .0057<br>(.88) | .3810 |
| Northeastern region | Omitted | -- |
| Western region | -.0190<br>(-2.36) | .0182 |
| North central region | .0164<br>(2.32) | .0205 |
| Southern region | .0892<br>(12.55) | .0001 |
| Intercept | 0.6082<br>(43.61) | .0001 |
| $R^2$ | .25 | |
| Dependent variable (full-time) mean | .5254 | |
| Number of Observations | 27,331 | |

TABLE 2 Regression Estimates of Determinants of Part-Time Work Status for Licensed Registered Nurses

| Independent Variable | Regression Coefficient (t Statistic) | Level of Significance |
|---|---|---|
| Age less than 25 | Omitted | -- |
| Age 25-34 | -.0072<br>(-.64) | .5223 |
| Age 35-44 | -.0458<br>(-3.61) | .0003 |
| Age 45-54 | -.0818<br>(-6.14) | .0001 |
| Age 55-64 | -.1047<br>(-7.50) | .0001 |
| Age 65 and over | -.0584<br>(-3.31) | .0009 |
| Experience less than 1 year | Omitted | -- |
| Experience 1 year | .0313<br>(1.32) | .1862 |
| Experience 2 years | .0069<br>(.52) | .6010 |
| Experience 3-5 years | .0438<br>(3.90) | .0001 |
| Experience 6-10 years | .1061<br>(9.29) | .0001 |
| Experience 11-15 years | .1584<br>(12.74) | .00001 |
| Experience 16-20 years | .1370<br>(10.14) | .0001 |
| Experience 21-25 years | .1182<br>(8.05) | .0001 |
| Experience 26 years and more | .1191<br>(8.57) | .0001 |
| Diploma | Omitted | -- |
| Associate degree | -.0056<br>(-.75) | .4541 |
| Baccalaureate degree | -.0486<br>(-7.29) | .0001 |
| Graduate degree | -.1052<br>(-8.88) | .0001 |
| Single | -.1082<br>(-17.34) | .0001 |
| Male | -.1267<br>(-8.28) | .0001 |

TABLE 2 (continued)

| Independent Variable | Regression Coefficient (t Statistic) | Level of Significance |
|---|---|---|
| Children younger than 6 | .1967<br>(25.32) | .0001 |
| Children 6 and over | .0955<br>(13.71) | .0001 |
| Student | .0147<br>(1.77) | .0766 |
| White | Omitted | -- |
| Black | -.1366<br>(-9.97) | .0001 |
| Hispanic | -.0290<br>(-1.29) | .1982 |
| Other minority | -.1931<br>(-11.22) | .0001 |
| Non-SMSA | -.0199<br>(-3.22) | .0013 |
| Northeastern region | Omitted | -- |
| Western region | .0221<br>(2.91) | .0036 |
| North central region | .0196<br>(2.94) | .0033 |
| Southern region | -.0785<br>(-11.69) | .0001 |
| Intercept | 0.2002<br>(15.18) | .001 |
| $R^2$ | .11 | |
| Dependent variable (part-time) mean | .2541 | |
| Number of Observations | 27,331 | |

TABLE 3 Regression Estimates of Determinants of Inactive Work Status for Licensed Registered Nurses

| Independent Variable | Regression Coefficient (t Statistic) | Level of Significance |
|---|---|---|
| Age less than 25 | Omitted | -- |
| Age 25-34 | .1036<br>(11.09) | .0001 |
| Age 35-44 | .2520<br>(23.90) | .0001 |
| Age 45-54 | .3322<br>(29.99) | .0001 |
| Age 55-64 | .5147<br>(44.31) | .0001 |
| Age 65 and over | .8892<br>(60.67) | .0001 |
| Experience less than 1 year | Omitted | -- |
| Experience 1 year | -.0234<br>(-1.19) | .2341 |
| Experience 2 years | -.0199<br>(-1.81) | .0700 |
| Experience 3-5 years | -.0520<br>(-5.55) | .0001 |
| Experience 6-10 years | -.1308<br>(-13.76) | .0001 |
| Experience 11-15 years | -.2569<br>(-24.83) | .0001 |
| Experience 16-20 years | -.3084<br>(-27.41) | .0001 |
| Experience 21-25 years | -.3538<br>(-28.93) | .0001<br>.0001 |
| Experience 26 years and more | -.3700<br>(-31.99) | .0001 |
| Diploma | Omitted | -- |
| Associate degree | -.1223<br>(-19.48) | .0001 |
| Baccalaureate degree | -.0447<br>(-8.06) | .0001 |
| Graduate degree | -.0390<br>(-3.95) | |

TABLE 3 (continued)

| Independent Variable | Regression Coefficient (t Statistic) | Level of Significance |
|---|---|---|
| Single | -.0811<br>(-15.60) | .0001 |
| Male | -11.06<br>(-8.69) | .0001 |
| Children younger than 6 | .1146<br>(17.74) | .0001 |
| Children 6 and over | -.0134<br>(-2.38) | .0175 |
| Student | -.0173<br>(-2.49) | .0127 |
| White | Omitted | -- |
| Black | -.0886<br>(-7.7) | .0001 |
| Hispanic | -.0603<br>(-3.21) | .0013 |
| Other minority | -.0754<br>(-5.26) | .0001 |
| Non-SMSA | -.0019<br>(-.37) | .7133 |
| Northeastern region | Omitted | -- |
| Western region | .0011<br>(.17) | .8625 |
| North central region | -.0276<br>(-4.96) | .0001 |
| Southern region | -.0009<br>(-.16) | .8734 |
| Intercept | .1565<br>(14.26) | .0001 |
| $R^2$ | .21 | |
| Dependent variable (inactive) mean | .1696 | |
| Number of Observations | 27,331 | |

## Wage Analysis

A multivariate regression was performed to assess a number of factors that are believed to influence differences in nurses' wages. The 1980 Sample Survey data were used to examine the effect of the following independent variables on the dependent variable, monthly wage of full-time nurses: highest education, years of experience in nursing, job position, age, sex, race, geographic region, and residence in a non-SMSA.

The estimated equation takes the form

$$Y_i = a + b_1X_i + b_2X_i + \ldots + b_nX_i + e_i,$$

where Y is monthly gross earnings as reported in the survey, and the X's represent the independent variables listed above. Each b represents the change in monthly earnings (Y) attributed to a change in a given $X_i$ variable, all other X's held constant.

The results of the regression are presented in Table 4. In general, the relatively small value of $R^2$ (0.2) suggests that factors such as local labor markets, the personal attributes of individual nurses, and individual employer characteristics predominate as wage determinants.

TABLE 4 Regression Estimates of Determinants of Monthly Wage Rates for Full-Time Licensed Registered Nurses

| Independent Variable | Regression Coefficient (t Statistic) | Level of Significance |
|---|---|---|
| Diploma | Omitted | -- |
| Associate degree | 85.04<br>(2.00) | .0451 |
| Baccalaureate degree | 131.72<br>(3.49) | .0005 |
| Graduate degree | 379.74<br>(5.71) | .0001 |
| Years of experience | 11.36<br>(4.29) | .0001 |
| Age | -1.84<br>(-0.86) | .3918 |
| Job position | | |
| Staff nurse | Omitted | -- |
| Administrator | 400.33<br>(6.55) | .0001 |
| Supervisor | 120.36<br>(2.04) | .0411 |
| Head nurse | 157.27<br>(3.13) | .0017 |

TABLE 4 (continued)

| Independent Variable | Regression Coefficient (t Statistic) | Level of Significance |
|---|---|---|
| Educator | 130.28<br>(1.83) | .0666 |
| Clinical specialist | 255.14<br>(3.85) | .0001 |
| Other position | 140.09<br>(2.22) | .0267 |
| Male | 217.90<br>(2.94) | .0033 |
| White | Omitted | -- |
| Black | 359.86<br>(5.46) | .0001 |
| Hispanic | 103.67<br>(0.88) | .3787 |
| Other minority | 243.88<br>(2.88) | .0040 |
| Non-SMSA | -138.49<br>(-3.76) | .0002 |
| Northeast region | Omitted | -- |
| North central region | 120.99<br>(3.06) | .0022 |
| Southern region | 84.44<br>(2.21) | .0274 |
| Western region | 282.90<br>(6.26) | .0001 |
| Intercept | 1148.58<br>(16.74) | .0001 |
| $R^2$ | .02 | |
| Dependent variable (monthly wage) | 1472.52 | |
| Number of Observations | 14,166 | |

## REFERENCES AND NOTES

1. Feldstein, M.S. A binary variable multiple regression method of analysing factors affecting peri-natal mortality and other outcomes of pregnancy. Journal of the Royal Statistics Society, Series A, 1966, 129, 61-73.

2. Goldberger, A.S. Econometric theory. New York: John Wiley and Sons, 1964, pp. 248-250.

## APPENDIX 8

# Nursing Research: Definitions and Directions

In order to provide further insight into the need for, philosophy, and scope of nursing research this appendix presents a position statement issued by the Commission on Nursing Research of the American Nurses' Association. It is quoted here in its entirety:*

> Recent years have seen a growing awareness among the public that valuable resources are finite and their use must be carefully considered. In this context, increasing attention is being given to the relative cost of various strategies for utilizing health care resources to meet the present and emerging needs of the nation. Concurrently, nurses are assuming increased decision-making responsibility for the delivery of health care, and they can be expected to continue to assume greater responsibility in the future. Therefore, the timeliness and desirability of identifying directions for nursing research that should receive priority in funding and effort in the 1980s is apparent.
>
> The priorities identified below were developed by the Commission on Nursing Research of the American Nurses' Association, a nine-member group of nurses actively engaged in research whose backgrounds represent considerable diversity in preparation and experience. The priorities represent the consensus of the commissioners, developed through a process of thoughtful discussion and careful deliberation with colleagues.
>
> Accountability to the public for the humane use of knowledge in providing effective and high quality services is the hallmark of a profession. Thus, the preeminent goal of scientific inquiry by nurses is the ongoing development of knowledge for use in the practice of nursing; priorities

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*American Nurses' Association. Research priorities for the 1980s: Generating a scientific basis for nursing practice (Publication No. D-68). Kansas City, Mo.: American Nurses' Association, 1981.

are stated in that context. Other guiding considerations were the present and anticipated health problems of the population; a historic appreciation of the circumstances in which nursing action has been most beneficial; nursing's philosophical orientation, in which emphasis is on a synthesis of psychosocial and biomedical phenomena to the end of promoting health and effective functioning; and projections regarding the types of decisions nurses will be making in the last decades of the twentieth century. New, unanticipated problems will undoubtedly confront the health care resources of the country; yet it is clear that many of the problems of the future are already manifest today. New knowledge is essential to bring about effective solutions. Nursing research directed to clinical needs can contribute in a significant way to development of those solutions.

## Definition of Nursing Research

Nursing research develops knowledge about health and the promotion of health over the full lifespan, care of persons with health problems and disabilities, and nursing actions to enhance the ability of individuals to respond effectively to actual or potential health problems.

These foci of nursing research complement those of biomedical research, which is primarily concerned with causes and treatments of disease. Advancements in biomedical research have resulted in increased life expectancies, including life expectancies of those with serious injury and those with chronic or terminal disease. These biomedical advances have thus led to growth in the numbers of those who require nursing care to live with health problems, such as the frail elderly, the chronically ill, and the terminally ill.

Research conducted by nurses includes various types of studies in order to derive clinical interventions to assist those who require nursing care. The complexity of nursing research and its broad scope often require scientific underpinning from several disciplines. Hence, nursing research cuts across traditional research lines, and draws its methods from several fields.

## Directions for Research

Priority should be given to nursing research that would generate knowledge to guide practice in:

1. Promoting health, well-being, and competency for personal care among all age groups;

2. Preventing health problems throughout the life span that have the potential to reduce productivity and satisfaction;
3. Decreasing the negative impact of health problems on coping abilities, productivity, and life satisfaction of individuals and families;
4. Ensuring that the care needs of particularly vulnerable groups are met through appropriate strategies;
5. Designing and developing health care systems that are cost-effective in meeting the nursing needs of the population.

## Examples

Examples of research consistent with these priorities include the following:

- Identification of determinants (personal and environmental, including social support networks) of wellness and health functioning in individuals and families, e.g. avoidance of abusive behaviors such as alcoholism and drug use, successful adapation to chronic illness, and coping with the last days of life.
- Identification of phenomena that negatively influence the course of recovery and that may be alleviated by nursing practice, such as, for example, anorexia, diarrhea, sleep deprivation, deficiencies in nutrients, electrolyte imbalances, and infections.
- Development and testing of care strategies to do the following:

  Facilitate individuals' ability to adopt and maintain health enhancing behaviors (e.g. alterations in diet and exercise).

  Enhance patients' ability to manage acute and chronic illness in such a way as to minimize or eliminate the necessity of institutionalization and to maximize well-being.

  Reduce stressful responses associated with the medical management of patients (e.g. surgical procedures, intrusive examination procedures, or use of extensive monitoring devices).

  Provide more effective care to high-risk populations (e.g. maternal and child care service to vulnerable mothers and infants, family planning services to young teenagers, services designed to enhance self-care in the chronically ill and the very old).

Enhance the care of clients culturally different from the majority (e.g. Black Americans, Mexican-Americans, Native Americans) and clients with special problems (e.g. teenagers, prisoners, and the mentally ill), and the underserved (the elderly, the poor, and the rural).

- Design and assessment, in terms of effectiveness and cost, of models for delivering nursing care strategies found to be effective in clinical studies.

All of the foregoing are directly related to the priority of developing the knowledge and information needed for improvement of the practice of nursing.

While priority should be given to this form of clinical research, there is no intent to discourage other forms of nursing research. These would include such investigations as those utilizing historical and philosophical modes of inquiry, and studies of manpower for nursing education, practice, and research, as well as studies of quality assurance for nursing and those for establishment of criterion measures for practice and education.

APPENDIX 9

# Participants in the Study's Workshops and Advisory Panels

The committee was privileged to draw on the knowledge of many distinguished people during the course of the study; they are listed in this appendix. Many leaders in the nursing profession gave generously of their time. Their contributions to consideration of issues in nursing education, in nursing research, and in nursing services were invaluable. In addition, as the listings illustrate, the study's advisory panels and workshops drew on participants representing a broad range of other professional backgrounds and experience. Their assistance, also, was invaluable in consideration of issues related to identification of data required for the study, trends, and projection methodologies; the cost and financing of nursing education; and the economics of nurse supply and demand.

Members of each of the five advisory panels usually met together twice. The advice of individual members was solicited more frequently, on an informal basis. The Economics Workshop was a day-long meeting; sessions of the Workshop on Advanced Nurse Education covered 2 days.

## Advisory Panel on Nursing Education Costs and Financing to the IOM Study of Nursing and Nursing Education

* Roger J. Bulger, chair
President, University of Texas Health Science Center at Houston

Eileen Alessandro
Executive Director, Association of Diploma Schools of Professional Nursing

Steven D. Campbell
Director, Financial Management Center, National Association of College and University Business Officers

---

* Member--IOM Study Committee on Nursing and Nursing Education.

Joseph Paul Case
Director of Program Administration, College Scholarship Service, College Board

Salvatore B. Corrallo
Director, Student and Institutional Financing Division, Office of Program Budgeting and Evaluation, Department of Education

Joseph C. Czerwinski
President, The Czerwinski Group, Inc., Milwaukee, Wisconsin

Ruth S. Hanft
Consultant

Gladys Chang Hardy
Program Officer in Charge, Education and Culture Program, The Ford Foundation

Rose Muscatine Hauer
Director of Nursing Service, Dean, School of Nursing, Beth Israel Medical Center, New York City

Robert Kinsinger
Vice President, W.K. Kellogg Foundation

Wayne R. Kirschling
Deputy Commissioner, Indiana Commission for Higher Education

Lucille Knopf
Division of Research, National League for Nursing

Mary Nell Lehnhard
Executive Washington Representative, Federal Financing and Tax Legislation, Blue Cross and Blue Shield Association

Lawrence S. Lewin
President, Lewin and Associates, Washington, D.C.

* Robert A. Wallhaus
Deputy Director for Academic and Health Affairs, Illinois Board of Higher Education

* Ruby L. Wilson
Dean and Professor, School of Nursing, Duke University

## Advisory Panel on Data Needs for the IOM Study of Nursing and Nursing Education

* Edward B. Perrin, chair
Director, Health and Population Study Center, Battelle Human Affairs Research Centers

Myrtle Aydelotte
Executive Director, American Nurses' Association (retired December 1981), Consultant (January 1982)

Walter Johnson
Director of Research, National League for Nursing

Wayne R. Kirschling
Deputy Commissioner, Indiana Commission for Higher Education

Evelyn B. Moses
Acting Chief, Data Development and Evaluation Section, Division of Health Professions Analysis, Health Resources Administration, Department of Health and Human Services
Now with Division of Nursing, Bureau of Health Professions Analysis, HRSA, DHHS

Carol S. Weisman
Associate Professor, School of Hygiene and Public Health, Johns Hopkins University

## Advisory Panel on Intervention Strategies to the IOM Study of Nursing and Nursing Education

* Robert C. Wood, chair (November 1981-January 1982)
Director of Urban Studies, Professor of Political Science, University of Massachusetts Harbor Campus

* Arthur E. Hess, chair (February 1982-April 1982)
Scholar-in-Residence, Institute of Medicine, National Academy of Sciences

* Otis R. Bowen
Professor and Director, Undergraduate Family Practice Education, Indiana University School of Medicine

Shirley S. Chater
Vice Chancellor, Academic Affairs, University of California, San Francisco

Robert A. Derzon
Vice President, Lewin and Associates, Inc., Washington, D.C.

Vernice D. Ferguson
Director, Nursing Service, Veterans Administration Central Office

Wayne R. Kirschling
Deputy Commissioner, Indiana Commission for Higher Education

Nan S. Robinson
Vice President for Administration, Rockefeller Foundation

Frank A. Sloan
Professor of Economics, Vanderbilt University

Nathan J. Stark
Senior Vice Chancellor, Health Sciences, University of Pittsburgh

## Advisory Panel on Nursing Education/Nursing Service to the IOM Study of Nursing and Nursing Education

* Edyth H. Schoenrich, chair
Associate Dean, Johns Hopkins University School of Hygiene and Public Health

Virginia Allen
Director of Accreditation, National League for Nursing

Myrtle Aydelotte
Executive Director, American Nurses' Association (retired December 1981), Consultant (January 1982)

Madeline A. Bohman
Executive Director, Bellevue Hospital Center, New York City

Rose Marie Chioni
Dean, School of Nursing, University of Virginia

Barbara A. Donaho
Corporate Director of Nursing, Sisters of Mercy Health Corporation

Sister Rosemary Donley
Dean, School of Nursing, Catholic University of America

* David H. Jeppson
Executive Vice President, Intermountain Health Care, Inc., Salt Lake City, Utah

Patricia Perry
Dean, Bishop Clarkson Memorial Hospital College of Nursing, Omaha, Nebraska

Doris L. Wagner
Chief Nurse, Bureau of Public Health Nursing, Division of Public Health, The Health and Hospital Corporation of Marion County, Indianapolis, Indiana

## Advisory Panel on Trends and Projections to the IOM Study of Nursing and Nursing Education

* Charles D. Flagle, Chair
Professor and Head, Division of Operations Research, Department of Health Services Administration, Johns Hopkins University School of Hygiene and Public Health

John Drabek
Chief of Supply and Requirements, Forecasting Branch, Health Resources Administration, U.S. Department of Health and Human Services

Hesook Susie Kim
College of Nursing, University of Rhode Island

* Carol Lockhart
Director, Division of Health Resources, Arizona Department of Health Services, Phoenix

William Losaw
Statistician, Health Resources Administration, Department of Health and Human Services

Scott A. Mason
President, National Health Advisors, Ltd., McLean, Virginia

* Edward B. Perrin
Director, Health and Population Study Center, Battelle Human Affairs Research Centers

* John D. Thompson
Professor of Public Health and Chief, Division of Health Services Administration, Yale University School of Medicine

Richard F. Tompkins
Deputy Director, Study of the Costs and Financing of Graduate Medical Education, Arthur Young and Company

Donald E. Yett
Professor of Economics and Director, Human Resources Research Center, University of Southern California

Economics Workshop of the IOM Study of Nursing and Nursing Education
October 16, 1981

Participants

* Isabel V. Sawhill, chair
Senior Fellow, The Urban Institute

* Linda H. Aiken
Vice President for Research, The Robert Wood Johnson Foundation

* Stuart H. Altman
Dean, The Florence Heller Graduate School for Advanced Studies in Social Welfare, Brandeis University

Myrtle Aydelotte
Executive Director, American Nurses' Association (retired December 1981), Consultant (January 1982)

Harold Cohen
Executive Director, Maryland Health Services Cost Review Commission

* Charles D. Flagle
Professor and Head, Division of Operations Research, Department of Health Services Administration, Johns Hopkins University School of Hygiene and Public Health

Lois Friss
Assistant Professor, Graduate Program in Health Services Administration, School of Public Administration, University of Southern California

Heidi I. Hartmann
Associate Executive Director, Commission on Behavioral and Social Sciences, and Education, National Academy of Sciences

Jesse S. Hixson
Chief, Modeling and Research Branch, Division of Health Professions Analysis, Health Resources Administration

* David H. Jeppson
Executive Vice President, Intermountain Health Care, Inc., Salt Lake City, Utah

Charles R. Link
Professor, Department of Economics, University of Delaware

Russell F. Settle
Associate Professor, Department of Economics, University of Delaware

Frank A. Sloan
Professor of Economics, Vanderbilt University

Gary S. Sykes
NIE Associate, National Institute of Education

* John D. Thompson
Professor of Public Health and Chief, Division of Health Services Administration, Yale University School of Medicine

William White
Associate Professor, Department of Economics, University of Illinois at Chicago

Donald E. Yett
Professor of Economics and Director, Human Resources Research Center, University of Southern California

### Advanced Nurse Education Workshop of the IOM Study of Nursing and Nursing Education

March 9-10, 1982

* Edyth H. Schoenrich, chair
Associate Dean, School of Hygiene and Public Health, Johns Hopkins University

Faye G. Abdellah
Deputy Surgeon General and Chief Nurse Officer, U.S. Public Health Service

* Ira Trail Adams
Dean and Professor, College of Nursing, University of Tulsa

Kathleen C. Andreoli
Executive Director of Academic Services, Office of the President, School of Nursing, The University of Texas Health Science Center

Myrtle Aydelotte
Executive Director, American Nurses' Association (retired December 1981), Consultant (January 1982)

Madeline A. Bohman
Executive Director, Bellevue Hospital Center, New York City

Pauline F. Brimmer
Director, Research and Policy Analysis Department, American Nurses' Association

Joan E. Caserta
Assistant Commissioner of Health for Personal Health Services, Westchester County Department of Health

Rose Marie Chioni
Dean, School of Nursing, University of Virginia

Luther Christman
The John L. and Helen Kellogg Dean, College of Nursing, Rush University

Anna B. Coles
Dean and Professor, College of Nursing, Howard University

Verla Collins
Director of Nursing Education and Education Information, Intermountain Health Care, Inc.

Peter Dans
Associate Professor and Director, Office of Medical Evaluation, Johns Hopkins University School of Hygiene and Public Health

Robert A. Derzon
Vice President, Lewin and Associates, Inc.

Donna Diers
Dean, School of Nursing, Yale University

Barbara A. Donaho
Corporate Director of Nursing, Sisters of Mercy Health Corporation

Sister Rosemary Donley
Dean, School of Nursing, Catholic University of America

Jo Eleanor Elliott
Director, Division of Nursing, Bureau of Health Professions Analysis, Health Resources and Services Administration, Department of Health and Human Services

Eunice K. M. Ernst
Director, Cooperative Birth Center Network--Maternity Center Association, Perkiomenville, Pennsylvania

Geraldene Felton
Dean, College of Nursing, University of Iowa

Vernice D. Ferguson
Director, Nursing Service, Veterans Administration Central Office

Cynthia Freund
Director, Nursing Administration Program, School of Nursing, University of Pennsylvania

Helen Grace
Dean, College of Nursing, University of Illinois Medical Center

John R. Hogness
President, Association of Academic Health Centers

Ada K. Jacox
Professor of Nursing and Director, Center for Research, School of Nursing, University of Maryland

Jean E. Johnson
Professor in Nursing and Associate Director of Oncology Nursing in Cancer Center, University of Rochester Medical Center

Jean A. Kelley
Assistant Dean, Graduate Program, School of Nursing, University of Alabama at Birmingham

Jerri Laube
Dean and Professor, School of Nursing, University of Southern Mississippi

Barbara J. Lee
Program Director, W. K. Kellogg Foundation (retired October 1982)

* Carol Lockhart
Director, Division of Health Resources, Arizona Department of Health Services, Phoenix

Barbara Wertman Lowery
Associate Professor, School of Nursing, University of Pennsylvania

Jannetta MacPhail
Dean and Professor, School of Nursing, University of Alberta

Kathleen McCormick
Assistant for Research to the Chief, Nursing Department, National Institutes of Health

Maurice I. May
Chief Executive Officer, Hebrew Rehabilitation Center for the Aged

Marion I. Murphy
Executive Director, American Association of Colleges of Nursing

Patricia Perry
Dean, College of Nursing, Bishop Clarkson Memorial Hospital, College of Nursing, Omaha, Nebraska

Jessie M. Scott
Associate Professor, School of Nursing, University of Maryland

Frank A. Shaffer
Director, Continuing Education Service and Director, National Forum of Administrators of Nursing Services, National League for Nursing

Barbara J. Stevens
Director, Division of Health Services, Sciences, and Education, Teachers College, Columbia University

* Frances D. Tompkins
Director of Nursing, Union Memorial Hospital, Baltimore, Maryland

Rheba de Tornyay
Dean and Professor, School of Nursing, University of Washington

Debbie Turner
Professional Staff Member, Committee on Labor and Human Resources, United States Senate

Patricia L. Valoon
Director of Nursing, University Hospital, New York University Medical Center

Doris L. Wagner
Chief Nurse, Bureau of Public Health Nursing, Division of Public Health, The Health and Hospital Corporation of Marion County, Indianapolis, Indiana

Thelma Wells
Associate Professor, School of Nursing, University of Michigan

Carolyn Williams
Associate Professor of Nursing and Epidemiology, School of Public Health, University of North Carolina

* Ruby L. Wilson
Dean and Professor, School of Nursing, Duke University

# Listing of Background Papers

The following papers were prepared by staff members or consultants to the study. Each deals with some particular aspect of nursing issues in considerably more detail than was possible to include in the report. They are solely the product of their authors, not of the study committee. They are made available to readers through the Publication-on-Demand service of the National Academy Press, and can be obtained from Publication-on-Demand, National Academy Press, 2101 Constitution Avenue, N.W., Washington, D.C. 20418, or by calling (202) 334-3113.

1. Myrtle K. Aydelotte
   Approaches to Conjoining Nursing Education and Nursing Service
2. Julia Bauder
   Methodologies for Projecting the Nation's Future Nurse Requirements
3. Katharine G. Bauer and Eugene Levine
   Analysis of Career Differences Among Registered Nurses With Different Types of Nurse Education
4. David Calkins
   Role Variability in Nursing
5. Michelle Habibi
   Legal Issues Influencing Nursing Practice
6. Eugene Levine
   The Registered Nurse Supply and Nurse Shortage
7. Deborah L. Parham
   Nursing in Underserved Areas
8. Gail Wiscarz Stuart
   Nursing Role Satisfaction
9. Margaret D. West
   The Projected Supply of Registered Nurses, 1990: Discussion and Methodology
10. Sunny G. Yoder
    The Institutional Costs of Nursing Education

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ISBN 0-309-03346-2